DOCUMENT RESUME

ED 407 776 EC 305 532

TITLE	Teaching Students with Visual Impairments. Programming for Students with Special Needs. No. 5.
INSTITUTION	Alberta Dept. of Education, Edmonton. Special Education Branch.
REPORT NO	ISBN-0-7732-1797-5
PUB DATE	96
NOTE	101p.
PUB TYPE	Guides - Classroom - Teacher (052) -- Reference Materials - Directories/Catalogs (132)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	Assistive Devices (for Disabled); *Blindness; Definitions; Educational Media; *Educational Needs; Educational Technology; Elementary Secondary Education; Foreign Countries; Instructional Materials; Student Needs; Teaching Methods; *Visual Impairments; Visually Impaired Mobility
IDENTIFIERS	Alberta

ABSTRACT

This resource guide offers suggestions and resources to help provide successful school experiences for students who are blind or visually impaired. Individual sections address: (1) the nature of visual impairment, the specific needs and expectations of students with visual impairment, and the educational implications of visual impairment; (2) gathering student information and the educational team; (3) instructional strategies (including classroom accommodations, instructional modifications, and instruction in social and life skills); (4) the use of specialized materials, equipment, and technology; (5) orientation and mobility instruction; and (6) students with visual impairments along with other disabilities. Fourteen appendices include: a sample data collection forms; information on Braille and closed circuit TV systems; information on orientation/mobility and sighted guide techniques; guidelines for using the long white cane; suggestions for teaching peer names and voices; and information for a substitute teacher. Additional resource sections include a glossary, a list of teaching resources, a list of publishers addresses, and a list of community resources in Alberta (Canada), and an annotated bibliography. (DB)

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Teaching Students with Visual Impairments

PROGRAMMING FOR STUDENTS WITH SPECIAL NEEDS

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Teaching Students with Visual Impairments

EC 305532

ALBERTA EDUCATION CATALOGUING IN PUBLICATION DATA

Alberta. Alberta Education. Special Education Branch.
Teaching students with visual impairments.

(Programming for students with special needs)
ISBN 0–7732–1797–5

1. Special education — Alberta. 2. Visually handicapped children — Education — Alberta. Title. II. Series: Programming for students with special needs.

LC3984.2.A3.A333 bk.5 1996 371.9

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This document is intended for:

Students	
Teachers	✓
Administrators	✓
Counsellors	✓
Parents	
General Public	

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* Note: Throughout this document, the term "parents" refers to parents or guardians.

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Introduction

This resource offers basic information to help provide successful school experiences for students who are blind or visually impaired. Teaching a student with visual impairments may be challenging. However, like all students, these students have strengths and areas for growth. Many of their needs are the same as other students.

The information in this book will address:

- the student's visual impairment
- the specific needs of students with visual impairments
- the educational implications of visual impairment
- instructional strategies
- the use of technology
- the importance of orientation and mobility instruction
- terminology used in referring to visual impairments (see Glossary, page VI.66).

Section I
Nature of Visual Impairment

Visual impairment refers to a significant loss of vision, even though the person may wear corrective lenses. The nature and degree of visual impairment may vary significantly, so each student may require individual adaptations to instructional practices and materials in order to learn effectively.

Visual impairment includes two main categories: blindness and low vision.

Blindness — Legal blindness ranges from a visual acuity of 6/60 (20/200) in the better eye after correction, to having no usable vision or a field of vision reduced to an angle of 20 degrees. Visual acuity of 6/60 (20/200) means that the individual sees at six metres (20 feet) what is normally seen at 60 metres (200 feet). A reduced field of vision means that the individual has tunnel vision with limited peripheral vision.

Low Vision — is reduced central acuity or visual field loss which, even with the best optical correction provided by regular lenses, still results in visual impairment from a performance standpoint.

Most students with visual impairments have low vision. These students should be encouraged to use their residual (remaining) vision, when appropriate, using the necessary optical aids and adaptations. Students who are described as blind may have some usable vision.

Visual impairments are further classified as congenital or adventitious.

- Congenital refers to loss of vision present at birth. Some of the more common causes of congenital visual impairment are:
  – prematurity
  – genetic diseases
  – prenatal and perinatal infections
  – maternal substance abuse.

- Adventitious refers to loss of vision acquired after birth as a result of illness or accident.

The age and level of development of the student before the onset of the visual impairment, influence the student's ability to acquire skills and concepts. Students with congenital blindness may have difficulty acquiring concepts, while students with adventitious blindness may retain sufficient visual memory to benefit from visual descriptions.

Although two students may be medically assessed as having the same diagnosis and visual acuity, they may each learn and function in different ways. A student's vision may fluctuate or may be temporarily influenced by such factors as:

- the nature of the visual impairment
- fatigue
- glare
- inappropriate lighting
- medication
- general health.

If a student is experiencing learning difficulties, the teacher should be alert to the possibility that a student may have a vision problem and take appropriate action (see Appendix 18, pages VI.57–58).

Common Eye Conditions

The following are the most common eye conditions teachers may encounter.

Albinism: Albinism is a genetic condition in which there is a lack of normal pigment in the eyes and often in the skin and hair. Students with albinism usually have reduced visual acuity, sensitivity to light and nystagmus (see definition in the adjacent column).

Cataract: A cataract is an opacity or cloudiness of the lens of the eyes, sometimes present at birth. Students with cataracts have reduced visual acuity and hazy vision which makes near and distant visual activities difficult, particularly in bright light. They may have poor colour discrimination.

Cortical visual impairment: Cortical visual impairment is caused by damage to the visual cortex in the brain or the nerve pathways. Most students with cortical visual impairment also have other disabilities. The visual response from students with cortical visual impairment is inconsistent. Providing visual stimulation may improve the student's ability to process visual input.

Glaucoma: Glaucoma is a disease in which there is damage to the optic nerve, through increased pressure from the fluid within the eye, resulting in reduced visual acuity and loss of peripheral vision. The fluid pressure is monitored regularly by an ophthalmologist. Students with glaucoma generally have difficulty with mobility and focusing their gaze between near and distant objects.

Hyperopia: Hyperopia (far-sightedness) is a condition in which the rays of light entering the eye focus behind the retina instead of on the retina. Students with hyperopia can see more clearly at a distance.

Macular degeneration: Macular degeneration is an eye disease which results in gradual loss of central vision. Students with macular degeneration have difficulty reading print on the blackboard or page.

Myopia: Myopia (near-sightedness) is a condition in which the rays of light entering the eye focus in front of the retina instead of on the retina. Students with myopia can see more clearly up close.

Nystagmus: Nystagmus is involuntary movement of the eyes which can cause fatigue when carrying out visual tasks. Nystagmus is associated with many eye conditions or it may be the only diagnosis identified by an ophthalmologist.

Optic atrophy: Optic atrophy is the degeneration of the optic nerve fibres so that they are no longer able to transmit accurate visual images from the retina to the brain. An ophthalmologist will sometimes describe a student as having pale or grey optic disks in one or both eyes, which is an indication of optic atrophy. It is important to determine just how well the student can interpret what is seen both up close and at a distance.

Retinitis pigmentosa: Retinitis pigmentosa is a hereditary condition in which the retinal cells degenerate, particularly the rods which are responsible for peripheral and night vision. This results in a progressive narrowing of the field of vision, night blindness and often extreme sensitivity to light. Students with retinitis pigmentosa have difficulty with mobility, scanning the environment and reading print on the blackboard or page.

Retinopathy of prematurity: Retinopathy of prematurity is a disease of the retina in which the retinal blood vessels do not develop normally and scar tissue forms. Most students with retinopathy of prematurity benefit from the use of high illumination and magnifying aids.

Strabismus: Strabismus is a muscle imbalance which prevents the eyes from focusing together on a single point to achieve binocular vision. Students with strabismus may have significantly decreased vision in one eye and have difficulty with depth perception.

Needs and Expectations of Students with Visual Impairments

It is essential that students with visual impairments:

- be made welcome and given the opportunity to form social relationships within the school and wider community
- be challenged to take risks that enable growth
- be made aware of personal strengths, talents, learning styles and interests
- have opportunities for experiential and incidental learning
- be included in discussions
- have opportunities to develop goals, dreams and aspirations
- feel safe and comfortable throughout the school
- be provided with optimum lighting situations
- work with individuals who understand the educational implications of vision loss
- have appropriate learning resources and technology made available
- be provided with appropriate materials and adaptive equipment to maximize learning
- be provided with daily opportunities to experience success
- develop positive self-esteem
- have the same rights and responsibilities as other students
- be expected to behave appropriately
- communicate effectively
- become independent and resourceful
- plan early for meaningful careers
- become self-advocates.

Educational Implications of Visual Impairment

Students with visual impairments sometimes have fewer natural learning experiences because they are not able to observe objects and interactions. The areas of learning which are particularly affected are:

- concept development
- interpersonal communication skills
- life skills
- orientation and mobility skills
- academic development.

Development of concepts is the basis for all learning. Spatial relationships, time, body awareness and self-awareness are just a few examples of fundamental concepts individuals need to make sense of their world. These concepts may need to be specifically taught to students with visual impairments. Although the main focus will be on academic development, providing a variety of opportunities for personal development can have a profound impact on a student who is visually impaired. Encouraging a positive self-image, appropriate dress, well-developed self-care skills, good interpersonal communication, appropriate behaviours, increased independence and productive community living can all be tremendously beneficial in the healthy growth of students with visual impairments.

As with all students, relationships are important for students with visual impairments and the classroom can be a wonderful place for development and maturity to flourish.

Section II
Gathering Student Information

The sample file review form found in Appendix 1 (pages VI.31–33) will assist the teacher in obtaining a comprehensive overview of student information in the following areas:

- medical
- functional vision
- educational.

This form provides a guided process for reviewing student files and may be used as an information base in the development of the student's individualized program plan (IPP). It may be completed in consultation with an education consultant or itinerant teacher/strategist for students with visual impairments.

It is important that substitute teachers be made aware that there is a student with a visual impairment in the classroom. When preparing for absences, teachers should include the file review form, teaching strategies, seating and equipment needs in their lesson plans (see Appendix 21, page VI.65).

To facilitate the gathering of information, the student, parent and resource personnel may be interviewed by the teacher. Sample questions and a summary of information form are provided in Appendices 2–5 (pages VI.34–40).

Students with visual impairments are encouraged to undergo examinations by ophthalmologists and/or optometrists to determine the nature and degree of the visual impairment. The education consultant or itinerant teacher/strategist will interpret the medical report for school personnel and identify the educational implications.

Functional Vision Assessment

The education consultant or itinerant teacher/strategist for students with visual impairments develops a profile of the student's visual skills through a functional vision assessment. This profile, which conveys a picture of how the student sees, will assist the education team in developing the IPP and in augmenting teaching strategies.

A variety of assessment techniques and measures are used in the student's learning environment to determine how vision is used and what adaptations may be necessary. They include:

- file review
- ecological inventory (This is a list of the student's needs developed by analyzing the environmental domains in which the student functions.) See *Programming for Students with Special Needs*, Book 2, assessing, evaluating and communicating student growth, page ESS.43.
- student observation
- interviews with parent and teachers
- play-based assessment
- performance-based assessment
- assessment portfolios
- developmental checklists

- assessment tools for determining:
  - visual acuity, the finest detail the eye can see at near and far distances
  - visual fields, the student's degree of peripheral vision
  - depth perception, the student's degree of binocular vision, which is the ability of both eyes to work together
  - colour vision
  - appropriate reading and writing media (print, braille, audio)
  - appropriate technological aids and devices.

A functional vision assessment should be repeated when the student makes the transition to a different school or classroom setting, as the student matures, or on the recommendation of the education consultant or itinerant teacher/strategist for students with visual impairments. Growth and maturity can affect the student's vision and the underlying visual impairment may change with time.

The development of a student with a visual impairment is affected by:

- the type and severity of the visual impairment
- the onset of the visual impairment
- the nature and degree of intervention
- the use of residual vision
- personality
- the availability of equipment and resources
- the presence of other disabilities
- family adjustment and acceptance
- cultural attitudes to visual impairment.

The Education Team

Team building creates enthusiasm, trust and mutual support, which, in the long term, leads to more effective and efficient task accomplishment. Preparation, planning and cooperation build the framework for learning. Establishing good communication with students, parents and community resource personnel will foster the student's social, emotional, communicative and educational development.

There is often a range of support services required for the student with a visual impairment. It is important to have a contact person in the school designated to coordinate the student's program. The education team may include the:

- student
- parent
- teacher
- school administrator
- school counsellor
- teacher assistant
- education consultant for students with visual impairments
- itinerant teacher/strategist
- orientation and mobility specialist
- jurisdiction's coordinator for students with special needs.

Responsibilities of Team Members

For a description of the roles and responsibilities of the principal, classroom teacher, special education/resource room teacher, parents and students in providing programming for students, refer to *Programming for Students with Special Needs*, Book 3, *Individualized Program Plans*, IPP.12–13.

The teacher assistant, education consultant, itinerant teacher/strategist and the orientation and mobility specialist for students with visual impairments have specialized knowledge and responsibilities.

Teacher Assistant

The teacher assistant is part of the education team. The primary responsibility of the teacher assistant is to support the classroom teacher, enabling the teacher to provide an educational program that meets the needs of all of students in the class, including the student with a visual impairment. It is important to define the role of the teacher assistant. The teacher assistant needs to be sensitive to the interactions between the student and peers, facilitating these relationships and the natural support that peers can provide. Supporting the student with a visual impairment who uses braille as a reading mode, involves becoming proficient in the use of braille. Other tasks may include:

- assisting in the preparation of braille, large print, audio or tactile materials
- ordering materials from the Materials Resource Centre for the Visually Impaired (MRC) and acting as liaison between the school and the MRC (See Appendix 20, page VI.60–64 and Section XI, page VI.91 for more information.)
- facilitating the student's use of optical aids
- adapting the environment to meet the student's needs
- acting as a scribe
- assisting in concept development
- working individually with the student to reinforce the specialized skills.

Education Consultant

The title used to denote the education consultant for students with visual impairments may vary within the province but the service expectations are similar. The role of the education consultant is to respond to the needs of the teacher through the provision of assessment, consultation and inservices.

These services may include:

- **assessment** of the student's functional vision, appropriate reading and writing media, appropriate technology, need for optical and non-optical devices, orientation and mobility skills, and the evaluation of reading skills
- **consultation** regarding adapted materials, techniques for instruction, orientation and mobility, modification of the classroom environment, and strategies for inclusion
- **inservices** addressing the inclusion of the student with visual impairments in the classroom, eye conditions, orientation and mobility, braille literacy, and the social implications of a visual impairment.

Itinerant Teacher/Strategist
Itinerant teacher/strategists may provide many of the same services as education consultants, including assessment, consultation, inservices, assistance with program planning, and provision of adapted materials and equipment. The itinerant teacher/strategist can provide individual instruction in the specialized skills which the student must acquire to become an efficient learner, and a confident and independent individual.

Orientation and Mobility Specialist
Orientation and mobility specialists are trained to teach students with visual impairments the concepts, skills and techniques which enable them to travel safely, and function efficiently in different conditions and situations in the environment.

Section III
Strategies

This section offers strategies for providing instruction to students with visual impairments. It is suggested that the education consultant or itinerant teacher/strategist for students with visual impairments assess the specific needs of the individual student.

Accommodations may then be incorporated to meet the individual needs of students. A broad range of strategies is provided in *Programming for Students with Special Needs*, Book 1, *Teaching for Student Differences*.

Classroom Accommodation

Welcoming the Student

- Introduce the student with a visual impairment as you would any other student.
- Encourage the student to answer questions posed by other students concerning the eye condition. It may be necessary to teach the student how to describe the eye condition in simple terms.
- Verbalize praise and disapproval or use gestures, such as a reassuring hand on the shoulder. A student with a visual impairment is not reinforced or cautioned by facial expressions and body language.
- Be specific with descriptive language and avoid using terms like "here" or "there" when describing the location of a person or object.
- Talk directly to the student rather than through an accompanying person.
- Use a normal tone of voice.
- Feel comfortable when using words like "look" and "see." They are part of the language and the student is used to hearing them.
- Provide the student with the coat hook or locker closest to the door so it is easy to locate.

Safety

It is important to include the student with a visual impairment in the full spectrum of school life, including assemblies, field trips, work experience and special events. A student with a visual impairment faces extra challenges when getting used to the physical environment of the school. Everything from attending gym class to visiting the washroom can present possible difficulties. Emergency procedures, such as fire drills, require that a plan of action be in place. The following suggestions will help ensure the student's safety.

- Keep classrooms, corridors and stairs free of clutter.
- Ensure that the student is aware of any object or piece of furniture that has been moved.
- Highlight the edges of stairs and steps with contrasting coloured duct tape or brightly coloured paint.
- Close or fully open doors and cupboards.

- Ensure that teachers and students are familiar with the sighted guide technique (see Appendix 14, pages VI.50–51).
- Arrange for a peer buddy or adult to act as a sighted guide on field trips or in unfamiliar environments.
- Ask the student's permission before giving physical assistance.
- Remind students and staff to identify themselves by name when addressing the student or when passing the student in the hallway. This is not necessary if the student can already identify a particular voice.
- Teach the student when it is appropriate to talk to strangers or volunteer personal information.

Seating

The decision of where to place the student should be made with the student, parent and an education consultant or itinerant teacher/strategist for students with visual impairments.

- Usually, the student is seated at the front of the classroom so that the student can make the best use of functional vision and is in close proximity to the teacher.
- If the student has stronger vision in the right eye, seat towards the left of the classroom and vice versa.
- The student should not be facing direct light sources such as windows and lamps.
- The student may need a reading stand or tilt-topped desk, which can elevate reading and writing materials. This will allow the student to maintain good posture, alleviate fatigue, bring the material closer to the student's eyes and increase the lighting on the task. Constantly bending over work can cause back and neck strain.
- If the student uses a brailler, it is important for the desk top to be low enough for the student to press down on the keys. When seated, the student's feet should be flat on the floor.

Lighting

- Close the blinds or switch off overhead lighting if there is glare on the blackboard, computer screen or laminated materials. Flat-finish mac tac is available from department and hardware stores.
- Different levels of illumination are required, depending on the visual impairment. An education consultant or itinerant teacher/strategist for students with visual impairments will advise on whether natural light, artificial lighting, subdued lighting or a direct source of light is required.

Contrast

- Increase the contrast between an object and the background. Black and white, or black and yellow afford the best contrast. Use coloured place-mats, construction paper, swatches of fabric or matte-finished contact paper to achieve contrast.
- Numbers which contrast with the colour of the door make it easier for the student to locate the room.
- Avoid using materials with confusing patterns.
- Reduce visual distractions around an object.

It is beneficial to hold regular meetings with the education team, particularly those who will be working directly with the student. This provides the opportunity to discuss daily, weekly or long-range program plans, become familiar with the topics and vocabulary which will be taught, and discuss necessary adaptations.

Concept Development

Students with visual impairments need assistance in making the connection between vocabulary, and real objects, body movements and abstract ideas. These students miss much incidental learning available to the sighted student and frequently develop inaccurate concepts.

- Pre-teach vocabulary and key concepts which relate to the curriculum through verbal explanations and concrete experiences using a multisensory approach. For example, orient the student to the library before library time or develop the concept of the skeletal system with real bones.
- Pre-teaching can be provided by someone other than the teacher, such as a peer, an older student, a teacher assistant or parent.
- After the student has participated in pre-teaching and classroom instruction, it is crucial to review concepts and vocabulary. Say, "Describe what you understand by this term."
- Concepts must be experienced repeatedly in various environments in order for the information to be generalized and for the student to gain expertise.

Organizational Skills

Organizational skills are an integral part of student success and are essential to the student with a visual impairment. The student is unable to scan the environment efficiently to locate misplaced items.

- Have the student organize his or her personal work space.
- Provide the student with a definite place to put things, with the expectation that the student use this space.
- Use containers and zippered pencil cases to store objects.
- Provide a tray or cookie sheet for objects that may roll easily off the desk.
- Use techniques for safely locating and searching for dropped objects (see Appendix 17, page VI.55–56).
- Provide colour-coded folders, binders and note books.
- Attach braille labels to binders and folders for the student who uses braille.
- Provide sufficient space for materials and equipment.

Listening Skills

Students with visual impairments achieve much of their learning through listening, so it is important that they develop good listening skills. Listening skills are taught as an integral part of the language arts curriculum in the elementary grades and students with visual impairments will benefit from these activities. In addition, it will be necessary to teach the following.

Perceptual awareness and interpretation of environmental sounds
Teach students to:
- discriminate between different sounds
- locate the direction of sounds
- associate sounds with objects and situations.

Listening and interpreting oral information
Teach students:
- to listen for sequence
- to listen for details
- to listen for main ideas
- new vocabulary. Check that the vocabulary is within the student's experience and has meaning.

Listening to audiocassettes
Teach students to:
- minimize distractions to increase attending
- sit in an upright position to maintain auditory attention
- read the questions to be answered before listening to the information
- listen to the pertinent parts of the tape prior to the lesson
- play a short portion of the tape, stopping it to write notes
- adjust the speed of the recorder.

Listening to a reader
Having someone read to the student has the following advantages.
- The student has immediate access to the same reading materials as other students.
- The reader can scan the text to find appropriate material.
- The reader can give information on spelling and punctuation.
- This is often the most efficient means of taking tests.

Listening resources
Some resources which may be useful are:
- *Listen and Think* (see Section IX, page VI.76)
- *Teaching Peer Names and Voices to a Student with a Visual Impairment* (see Appendix 19, page VI.59).

Reading Skills
Reading requires the efficient use of visual skills such as tracking, scanning, fixating and shifting gaze. Students with low vision must exert more energy to read fluently and sustain reading over a longer period of time. Different adaptations may be required at different age levels. Students who use braille generally require more time than other students to read the assigned text.

- Use a multisensory approach when teaching the alphabet. Real objects should be used to illustrate the initial sounds of words.
- Modify the amount of reading and provide audiocassettes or a reader, if necessary.
- Use a line marker if the student has difficulty tracking and/or locating the place in the text.
- Encourage the student to highlight important information when reading.
- Use a typoscope or template over a page of print to locate the next line.
- Allow the student to hold the page as close to the eyes as is necessary to read the print.
- Allow the student to take breaks from visual tasks. Students may tire if they are engaged in visual tasks for extended periods of time.
- Encourage the student to take responsibility for requesting a break when needed.

- Intersperse visual activities with non-visual activities.
- Use bold, well-spaced letters as these are often easier to see than larger letters.
- Use highly contrasting letters to make print easier to read.

Writing Skills

- Allow the student to write in the size of print that is easy for the student to read and to hold the page as close to the eyes as is necessary to read.
- Legibility is more desirable than style or speed.
- Felt pens, primary pencils, raised and bold lined paper can be used to make the student's writing more legible and make it easier for the student to write.
- Teach students who use braille to write their signatures. Raised lined paper and signature guides are available.
- Provide access to a computer at an early age, especially if the student continues to demonstrate difficulty with writing skills.

Taking Notes

Note-taking can be a difficult task for students with visual impairments.

- Verbalize what is being written on the blackboard and encourage the student to listen or write down the main points.
- Provide photocopied peer or teacher notes.
- Keep blackboards clean and in good repair to allow for print clarity.
- Avoid using pastel colours which do not provide good contrast.
- Acknowledge that the student may have a preference for white or yellow chalk.
- Be alert to glare from the blackboard and make the necessary accommodations.
- Allow the student to go up to the blackboard or pull the desk closer in order to view or copy the material.
- Check whether or not the student can see specific materials. Say, "Tell me what you see," rather than, "Can you see?" Students may pretend to see or assume they do.
- Provide a scribe when necessary.
- Provide an audio, good quality print or braille copy of the notes.
- Check periodically to ensure that the student is making accurate notes.
- A lap-top computer which has audio, braille or large print capabilities can be useful.
- Keyboarding skills are important for a student with a visual impairment. Large print letter overlays are available for keyboards.

Mathematics Skills

There may be a number of gaps in the student's general knowledge which would normally have been gained through visual observation. Depending on the nature and degree of the student's visual impairment, materials may be prepared in Nemeth code or in large print. Nemeth code is a mathematical and scientific notation code in braille (see Appendix 9, page VI.44). A student may use a combination of Nemeth code, large print or magnification.

The following adaptations and equipment may be incorporated into the student's mathematics program to enhance learning.

- Speed may be improved by adapting or shortening assignments.

- A variety of materials and methods for use with young students are described in the teaching resources section. See *Chisanbop, Base Ten Blocks* and *Cranmer Abacus* on page VI.74, *Cube-a-Link Cubes* on page VI.75 and *Math-mate* and *Rap with the Facts* on page VI.77.
- Make braille or large-print flash cards.
- Raised pictures, diagrams and concrete objects are necessary to develop concepts. Simple raised outlines are preferred.
- Consumable large print mathematics workbooks and work sheets may be provided to prevent errors in copying and increase speed and efficiency.
- A combination of visual, auditory and tactile approaches should be used. Many manipulative materials available in the classroom can be used by students with visual impairments.

The following resources and equipment are available through the Materials Resource Centre for the Visually Impaired on a loan basis:

- large print consumable workbooks for Grades 1–6
- Focus in Mathematics program (kit)
- large print and braille text books
- speech output calculators
- geometric shape kits
- Sewell raised line drawing kit
- American Printing House for the Blind clocks with raised or brailled numerals
- Wikki Stix (kit)
- light box with levels 1, 2 and 3 materials.

See Appendix 20, pages VI.60–64 and Section IX, pages VI.74–82 for additional information.

To assist in adapting materials, the school may need to purchase:

- a tracing wheel and neoprene (rubber) mat
- coloured glue
- raised line or bold graph paper
- braille and large print measuring devices
- self-adhesive felt dots
- crochet cotton for tactile illustrations.

Assignments and Examinations

Assignments and examinations can pose considerable difficulty for the student with a visual impairment. Examination results should reflect the student's knowledge of the subject content. Each student's individual needs require consideration. The student may take more time to complete an assignment or examination than other students. Some of the following strategies may be used.

- Consider the student's well-being when assigning homework, particularly if it requires extensive reading or writing. A student with a visual impairment is often fatigued by the end of the school day and visual efficiency may be reduced.
- Avoid having the student recopy questions from the text to paper. Provide a copy of the questions so that the answers can be written directly on the question sheet.
- Allow additional time for completion of assignments and examinations.
- Allow the student to complete an examination in more than one sitting, if necessary.
- Reduce the number of examples required to demonstrate the student's understanding of a concept or mathematics operation.

- Reduce the number of questions to be answered.
- Provide an alternate way of testing the student's learning. Multiple choice questions are difficult because of the amount of visual scanning and accommodating required.
- Provide a scribe.
- Give the examination orally.
- Accept typed answers, a computer print out or answers recorded on an audiocassette.
- Avoid the use of computer answer sheets, including large print Scantron sheets. Allow an alternate way for the student to record answers and arrange for answers to be marked individually.
- Ensure that examinations have appropriately sized print of good quality.

Information about special provisions and/or exemption from testing is included in the Alberta Education document, *General Information Bulletin, Provincial Student Assessment Program Grades 3, 6 and 9*, and *General Information Bulletin, Diploma Examinations Program 12.*

Social and Life Skills

A visual impairment may interfere with the student's ability to observe appropriate social behaviours and to learn basic life skills. Social and life skills which other students learn naturally through observing others and modelling, must be taught specifically to the student with a visual impairment.

- Teach the student to turn and face the speaker. However, some students do have eccentric viewing and need to tilt the head in order to see the person to whom they are speaking.
- A student with a visual impairment may have mannerisms, such as rocking when seated or repeatedly rubbing the eyes. Such mannerisms can interfere with social interactions. This is a sensitive issue; professional advice should be sought. Contact an education consultant or itinerant teacher/strategist for students with visual impairments for information and strategies for helping the student modify this behaviour.
- Encourage the student to initiate a conversation or play activity. The student will often wait silently until someone else takes the initiative.
- Help the student to understand and respect the personal space of others. The student will also need to be able to ask others, in a courteous way, to respect his or her personal space.
- The student with a visual impairment will frequently need to explore objects tactually to gain information and form accurate concepts. However, it is necessary for the student to learn when it is acceptable to touch, particularly when this relates to appropriate and inappropriate physical contact.

- Provide counselling and support for adolescents. This service may be obtained through the Canadian National Institute for the Blind, a school counsellor, a psychologist, psychiatrist or an education consultant or itinerant teacher/strategist for students with visual impairments. This is the stage when students will experience puberty, learn about relationships and dating, and need to come to terms with the possibility of not being able to drive a car. It is particularly important for the student to develop a strong self-image at a time when peer acceptance is influenced by appearance and behaviour.

The sections on life skills and social skills in *Programming for Students with Special Needs,* Book 1, *Teaching for Student Differences*; and Book 2, *Essential and Supportive Skills for Students with Developmental Disabilities* offer many suggestions that are appropriate for teaching students with visual impairments.

Section IV
Specialized Materials and Equipment

Students with visual impairments may need a variety of specialized materials and equipment in order to function effectively in the school environment. Provide adequate space for storing student materials and equipment, which is easily accessible to the student. Students learn to read and write using braille or print. Order resources in the appropriate format from the Materials Resource Centre for the Visually Impaired (MRC). These include braille or large print books, audiocassettes and kits. Order the resources well in advance. Items needed for the beginning of the school year should be ordered in May.

The MRC produces an annual titles and subjects catalogue, and mid-year supplements, provided to schools with students who are registered with the MRC (see Appendix 20, pages VI.60–64 and Section XI, page VI.91). The MRC also produces the *Kits Subject Catalogue*, *Equipment Catalogue* and *Catalogue of Consumable Items.*

Braille

Braille is an embossed symbolic system which is read tactually. It is the specific placement of six raised dots which are numbered. Various arrangements of the dots make up 63 combinations, which are called cells and represent numerals, letters of the alphabet, and word contractions (see Appendix 6, page VI.41).

Braille is produced on a six-key manual or computerized braille writer (see Appendix 7, page VI.42).
The student learns braille literacy through a braille reading and writing program which is recommended, monitored and evaluated by the education consultant or itinerant teacher/strategist for students with visual impairments, and implemented by school personnel (see Appendices 6–10, pages VI.41–45). Incidental learning materials in braille or tactile format should be provided for a student who requires embossed materials.

Some tips for brailling follow:

- Computerized braille writers can be borrowed from the MRC (see Appendix 20, pages VI.60–64).
- Braille paper can be purchased from the *Distribution Centre Supplies Catalogue*, Edmonton Public Schools and the Canadian National Institute for the Blind (see Section XI, pages VI.88–91).
- A felt pad is placed underneath the brailler when it is being used, to reduce noise.
- Students should do their brailling in the classroom at the same time as the other students are writing.
- Tactile books with raised and textured objects, twin vision books which are print books with a transparent braille overlay, braille texts and general reading books are available from the MRC.

Where it is impractical to use a braille writer, a slate and stylus, which are portable braille writing tools, can be helpful for taking notes. They are inexpensive and easily carried in a pocket or bag. The slate and stylus can be borrowed from the MRC and placed in convenient places such as by the telephone for taking messages, or in the kitchen for making a shopping list or taking down a recipe.

For braille illustrations, see Appendices 6–10 (pages VI.41–45).

Large Print

The education consultant or itinerant teacher/strategist for students with visual impairments will assess the size of print that will allow the student with low vision to maintain a constant reading speed at a comfortable distance without undue fatigue. The education consultant or itinerant teacher/strategist will also assess the need for bold or raised lined paper, primary pencils, felt pens, magnifiers, bookstands and other specialized equipment. Some suggestions for using large print materials follow.

- Enlarge print and graphic materials on the photocopier or computer for students with low vision. Select materials which have clear type and pictures; adequate spacing between lines, words and letters; adequate margins; good quality paper with non-glossy finish; and maximum contrast between print and background.
- The student may not require large print for all materials in all classes. For example, a student may only need mathematics books, dictionaries and maps in large print.
- The nature of the eye condition may make it necessary to provide large print at certain times of the day when the student is fatigued.
- Students with low vision may be able to use the same print as other students in the primary grades. By Grade 4, the size of print and quantity of reading material may make it necessary for the student to begin using large print.
- Involve the student in deciding when it is best to use large print. A student may only wish to use large print books for leisure reading or to have a large print copy of the text book at home.
- Large print books may be borrowed from the MRC. The MRC collection includes commercially produced large print as well as MRC-produced titles. Large print books have print sizes from 18–21 points.

Magnification

Magnifying devices can be used to enhance the size of print on the page and on the blackboard, and they can be used to make the details in near and distant objects more visible. Students using magnifying devices may experience decreased reading speeds because of the reduced visual field. Young students may not have the necessary fine motor control to use magnifiers efficiently. Some older students, generally from Grade 5 onward, should be encouraged to become proficient in the use of magnifiers because they provide access to a variety of regular print materials. The individual needs of the student should be assessed by an education consultant or itinerant teacher/strategist for the visually impaired who will

consider the characteristics of magnifiers. The student may benefit from further assessment at the Low Vision Clinic (see page VI.90).
Various hand-held, pocket and stand magnifiers that can assist students are available for purchase. Consideration must be given to working distance, field of view, depth of focus, weight, style and appearance of the device.
Telescopic lenses on glasses and monoculars may enable the student to locate stationary and moving objects at a distance, such as street signs, bus numbers and print on the blackboard.
The closed circuit television is an electronic magnifying device which is described in the section on technology (see page VI.23). Initial instruction in the use of magnifying devices can be provided by the education consultant or itinerant teacher/strategist for students with visual impairments. Some suggestions for magnification follow.

- Begin instruction in the use of magnifying devices with highly motivating materials such as comic books, fortune cookies, stamps, menus, names of products in the grocery store or the action at a hockey game.
- Provide opportunity for repetition of tasks.
- The higher the magnification, the smaller the area that can be seen at one time and the more important it is to hold the magnifier at a given distance.

Audiocassettes

Audiocassettes provide the student with an alternate learning mode. They can be borrowed from the MRC, Canadian National Institute for the Blind and public libraries.

- Introduce the use of audiocassettes by providing the student in the elementary grades with short stories, and older students with novels and material for at least one subject of study.
- Teach the student active listening, which is listening intently to the audiocassette to pick out the main ideas and make short study notes. The student should assume an upright posture when listening.
- Provide a print or braille copy of new vocabulary on cassette so that the student will learn the spelling of new terms and names.
- With experience, the student will be able to take advantage of the compressed speech feature on the recorder and listen to the tape at an increased speed.
- Books recorded on four-track tapes can only be played on four-track cassette recorders. These can be borrowed from the MRC.

The student will need training in listening skills. A program such as *Listen and Think*, available from the MRC, or other listening programs which may be available in the school are designed to help students learn basic listening skills in a sequential way. *Listen and Think* is for use in the elementary grades (see Section IX, page VI.76).

Technology

The use of computers is particularly important for students with visual impairments, as their ability to use written communication is often diminished or inefficient.

The education team should select computer hardware and software specific to the student's individual needs, considering the student's short and long-term educational goals and objectives. Appropriate selection of devices and technology, and subsequent training, is crucial for ensuring proper use of such devices. Remember that software and hardware must be compatible, and that systems used at home and at school need to be coordinated for efficient transfer of homework assignments. Suitable commercial products are noted in parentheses within the following categories of equipment. Ordering information is found in Section X, pages VI.86–87.

Information on a variety of visual aids and magnification devices is included in this section.

Screen Reader/Speech Synthesizer

Screen readers provide auditory feedback when using the keyboard as well as auditory access to information displayed on the monitor. These systems consist of a software program and a speech synthesizer. The software program sends information from the computer to the synthesizer, where phonemes are combined into words and the words are spoken. Most systems allow choices in volume, voice quality and speed of output. Students with limited or no reading vision will find these devices useful, especially when connected to braille and regular printers for output (Intellitalk, JAWS, Outspoken, IBM ScreenReader/DOS).

Screen Enlarger

Screen enlarger software programs display information on a computer screen in a variety of magnification levels, up to 16 times the standard. The entire screen, a portion of the screen or just one line may be enlarged. Students with low vision may benefit from these programs (IBM ZoomText, MAGic, VisAbility, Mac inLARGE, Large Print DOS).

Another type of screen enlarger is a computer accessory that fits over a monitor screen (Compu-Lenz). A third alternative is a processor which interfaces with an Apple IIe computer to provide screen enlargement.

Voice Access

Voice access systems allow the user to interact with the computer screen by using voice commands instead of the keyboard. They are particularly useful for students who have difficulties with fine motor control as well as visual impairments. These systems include special software and sound cards to allow for voice output of information on the screen. As with screen readers, they can be connected to braille and regular printers for output (DragonDictate).

CD-ROM

CD-ROM is a software storage device capable of holding large amounts of information. Information displayed on the computer screen from the CD can be accessed through the use of screen enlargement, screen readers and electronic braille displays.

Electronic Reading System

Electronic reading systems scan printed information. Through the speech synthesizer, the words of the scanned text are spoken aloud. Each system is composed of:

- a scanner
- optical character recognition (OCR) software
- a speech synthesizer
- a keyboard.

The user controls the:

- speech rate
- volume
- voice quality
- amount of text read at one time (letter for letter, single word, sentence, etc.).

When used in conjunction with computer systems equipped with braille printers or font-sized word processing programs, these systems can be used in educational settings to convert standard print materials to braille or large print format. These systems are often found in public libraries throughout Alberta (Reading Edge).

Brailler

The brailler is a piece of equipment used for braille writing. The brailler's six keys correspond to the six dots of the braille cell. Braillers are portable and can be carried from class to class, although they are heavy for young students. Special heavyweight braille paper can be purchased from the Canadian National Institute for the Blind and Edmonton Public Schools Distribution Centre.

Portable Electronic Braille Writer

These small computerized devices have standard six-key braille keyboards that allow the user to write, read, edit and sort approximately 200 pages of braille.

They can be connected to personal computers as well as regular and braille printers. Students with limited or no vision will find them useful. Electronic braille writers:

- have speakers for voice output
- have an adjustable rate of speech
- are portable
- can be run on a rechargeable battery
- can be used to silently take notes in the classroom
- have either a small braille display and/or speech output (Braille 'n Speak, Braille Mate, Braille Lite, Type 'n Speak).

Braille Computer System

Braille computer systems allow a student who uses braille to access word processing and complete other tasks on a personal computer. Generally, they consist of specialized software, a braille display and in some cases, a laptop computer. As with other types of computer software, braille computer systems are designed for specific operating systems and computers; e.g., Apple, Mac, DOS, etc.

Print-to-Braille Software

Print-to-braille software allows a computer user who is not highly proficient in braille transcription to produce braille documents from print or electronic data (CD-ROMs, Internet, Scanner). When combined with a braille printer, a variety of teacher-designed materials can be prepared for a student. This software is generally used by school personnel but may be also used by students (Duxbury, MegaDots).

Calculator

Calculators with voice output allow students to do a wide variety of mathematical calculations. Most units have earphones and some keypads have tactile indicators for significant keys. Enlarged print displays and scientific calculators for advanced work are available (Sharp, Panasonic, Texas Instrument).

Closed Circuit Television

Closed circuit television systems electronically enlarge printed, hand-written and graphic materials onto a monitor screen. The components include a camera with a zoom lens and light source, a monitor, and a flat movable counter. Portable and colour units are also available. Students with low vision may find these systems useful. The student can control the size, focus, brightness and contrast, and polarity of the display (black on white to white on black). For further information and illustrations, see Appendices 11–12, pages VI.46–47.

Cassette Recorder

Cassette recorders can be used as writing tools as well as reading tools. Students with no vision, as well as those with limited vision, can benefit from the use of cassette recorders. Useful features of specialized cassette recorders include:

- play and record at variable speeds
- play and record on two tracks per cassette side
- tone indexing (insertion of a beep to mark a section of text)
- tactile markings on control keys
- operate on regular current and rechargeable batteries
- built in microphone and ear-phone attachment.

Descriptive Video Service (DVS)

DVS carefully describes the visual elements of a movie: the action, characters, locations, costumes and sets without interfering with the movie's dialogue or sound effects. Students with any degree of visual impairment will enjoy these tapes.

Low Tech Adaptations

Keyboard access can be maximized through the use of enlarged keyboard labels and tactile indicators.

Non-optical adaptations for improving access to the screen display include:

- adjustable lighting
- polarized screen filters
- monitor hoods to reduce glare
- adjustable document holders
- adjustable computer stand for close viewing (PowerBraille).

Section V
Orientation and Mobility

Orientation and mobility instruction prepares students with visual impairments to travel independently. Orientation skills help students to be aware of their bodies in space and the surrounding environment. Mobility skills are specific techniques used to enable students to move easily from one place to another.

When planning and implementing all orientation and mobility programs, consult with the specialists available in your jurisdiction.

The goal of an orientation and mobility program is to ensure that students can move safely and efficiently within the educational environment. The educational environment begins with the classroom, but extends to the entire school, including outdoor settings with sidewalks, playgrounds and bus/car drop-off points. Strategies for including students in field trips, work experience settings and school-based community outings are also important.

As students grow, mature and enter a wider variety of environments, the program will adjust to meet these changing needs. Familiarizing students to a new physical setting, such as entering a new school or classroom, is crucial. This is done by establishing a definite landmark as a home base and exploring the area in a systematic way.

An individual program is determined by considering the following factors:

- diagnosis and degree of visual impairment
- prognosis of visual impairment
- functional vision
- presence of other disabilities
- age
- cognitive functioning
- general health
- school and community environment
- family, school and community resources.

Orientation skills can be incorporated within many regular classroom activities, particularly in pre-school and early elementary classes. Games, songs and activities which teach or reinforce concepts such as awareness and naming of body parts, positional concepts, sensory awareness and basic movement patterns, address these essential components of the program (see Appendix 13, pages VI.48–49).

Specific learning experiences planned for individual students can be taught and reinforced incidentally, throughout the school day. These experiences include:

- environmental awareness — includes awareness of air temperature, air currents, scents, sounds, floor and wall coverings, furniture arrangement, and objects in the hallway.
- identifying landmarks — any permanent sensory information that assists individuals during independent travel. Learning that the first door on the left is the library entrance or that the flooring

changes from linoleum to carpet at the reading centre, helps students locate themselves within the school environment. Landmarks should have significance for the student.

- structural components of rooms and buildings — use models such as doll houses, Lego models and play house centres to help students understand concepts that they may not be able to experience visually. These may include: corner, doorway, window, heating elements, basement, hallway, etc.
- directionality — left/right, followed by cardinal directions (north, south, east, west).

Mobility skills must be chosen to meet each student's specific needs and situation. Some common mobility skills follow:

- Sighted guide — one option for getting from place to place is to utilize the assistance of a sighted guide. Teachers, staff, family members and peers can act as sighted guides and should be taught guide techniques. The student with a visual impairment grasps the guide's arm just above the elbow and maintains a position one-half step behind the guide. Depending on the height of the student and the guide, the student may grasp the guide's wrist or extended finger (see Appendix 14, pages VI.50–51).
- Trailing — is a method of travel that can be used to get to a desired location while maintaining contact with a surface. This means of travel is taught to facilitate orientation by memorizing landmarks located along a frequently travelled route. The trailing technique is demonstrated by extending one's arm at a 45º angle in front and to the side of the body, with the back of the hand following the trailing surface (see Appendix 15, page VI.52).
- Upper protective technique — protects the student's head and upper body from contact with obstacles. Either arm can be used in combination with lower protective technique or trailing. The arm is held across the upper body with the elbow bent and the palm facing forward (see Appendix 15, page VI.53).
- Lower protective technique — protects the middle area of the body from contact with obstacles. Either arm can be used in combination with the upper protective technique. The arm is held across the middle of the body with the elbow straight and the palm facing inward (see Appendix 15, page VI.53).

Mobility Devices

There are many factors to consider when selecting a mobility device for a student. These include:

- ability to hold a device
- balance
- motor skills
- attention span
- visual functioning
- age
- motivation and attitude.

The long white cane is a device that is used successfully by students with visual impairments, including those with additional disabilities (see Appendix 16, page VI.54). Once the need for the long white cane is determined, orientation and mobility instruction must commence to develop this highly essential and specialized skill.

Canes vary in size, weight and manufacturing materials. Adaptations can be made to accommodate the individual needs of the student. If the long white cane will be the eventual mobility device of choice, a positive attitude for its use must be established early.

The education consultant or itinerant teacher/strategist for students with visual impairments, or the orientation and mobility specialist informs the family and student of resources which can assist the student in learning appropriate orientation and mobility skills for travel beyond the educational environment.

Section VI
Students with Visual Impairments and Other Disabilities

Visual impairments may exist in combination with other disabilities. There are some students with visual impairments who also have developmental disabilities, are deaf or hard of hearing, or have physical disabilities. When a student has more than one disability, it is important to assess each disability separately and to assess how the combined disabilities impact the student's total performance. The student with a visual impairment has difficulty gaining information about the world. This is made more difficult if the student cannot conceptualize easily because of a developmental disability, cannot hear meaningful sounds or cannot physically move to explore.

Strategies

A coordinated interdisciplinary team approach to assessment and program planning is necessary. The consultants required depend on the individual student's disabilities, and may include physiotherapists; occupational and speech therapists; psychologists; behaviour specialists; social workers; education consultants or itinerant teacher/strategists for students with visual impairments; education consultants for students who are deaf or hard of hearing and audiologists. It is vital that the student's needs be thoroughly assessed so that an appropriate educational program can be developed. Interdisciplinary teams of consultants are available to assist all teachers who work with Alberta students with sensory multihandicaps through Alberta Education, at a subsidized rate. (See Section XI, pages VI.88–91.)

Instructional Practices for Students with Visual Impairments and Developmental Disabilities

The instructional process must include opportunities for the student to explore new objects and places, and be exposed to a variety of experiences. Students must experience a variety of textures, shapes, weights, temperatures, sounds, smells and tastes to build meaningful relationships and concepts about the environment.

- Provide opportunities to practise and reinforce skills in natural settings throughout the day. Repetition is necessary for the student to master new skills.

- If the student has residual hearing, use stationary sound sources to orient the student to important locations and landmarks, such as hanging wind chimes in the door way, or placing a metronome near the carpet for circle time.
- Activities should be task analyzed and broken down into steps so that each step can be taught sequentially. Refer to *Programming for Students with Special Needs,* Book 2, task analysis, pages ESS.18–42.
- Provide opportunities for the student to be with students who do not have disabilities for purposes of modelling their behaviour.
- Create opportunities for the student to develop meaningful relationships with adults and peers who may or may not have disabilities.
- The long white cane and a variety of adaptive mobility devices are used by these students. These devices allow a student to move more freely and confidently through open spaces.

Vision Stimulation

A student's residual vision may need to be stimulated so that the student will use it more efficiently. This should be done incidentally throughout the day in natural settings and activities. The student's need for vision stimulation must be assessed by the education consultant or itinerant teacher/strategist for students with visual impairments before vision stimulation is included in the student's program.

- Consult the physiotherapist or occupational therapist regarding the optimal physical position for viewing.
- Allow enough time for the student to respond to visual stimuli, as there may be a latent response.
- Use materials that are brightly coloured, in high contrast to the background and provide simple outlines that are easily interpreted.
- Pair visual information with other sensory cues, particularly auditory cues.
- Create opportunities that require the student to look, such as placing a cup in a variety of positions on the table so that the student must visually search for it.
- Be aware of the student's visual preferences for colour, field of vision, and shape and size of objects.
- Avoid over stimulating the student through the introduction of too much clutter.

Additional information and strategies can be found in *Programming for Students with Special Needs,* Book 2, *Essential and Supportive Skills for Students with Developmental Disabilities.* Particularly useful information can be found in instructional strategies for teaching students with developmental disabilities, pages ESS.15–42.

Instructional Practices for Students with Visual Impairments who are Deaf or Hard of Hearing

It is essential to seek assistance from an education consultant or itinerant teacher/strategist for students with visual impairments and an education consultant for the deaf and hard of hearing to assess the student's needs and to determine the most appropriate communication system for the student.

Many of the suggestions given throughout this document will be useful when working with students with visual impairments who are deaf or hard of hearing.

- The following materials and adaptations are appropriate for students who have some vision: large print, magnification devices, large screen televisions that enlarge the size of the closed captions, large print displays on TDD telephones and highly contrasting colours.
- If the student is using sign language as the primary means of communication, seat the student as close to the teacher as possible so that the student does not miss any information.
- If other students in the class are using sign language but are too far away from the student for the signs to be interpreted, the relevant information should be repeated by the teacher or a buddy who is sitting next to the student.
- The inclusion of the student in all classroom activities is essential to prevent the student from becoming isolated.

See also *Programming for Students with Special Needs*, Book 4, *Teaching Students who are Deaf or Hard of Hearing*.

Instructional Practices for Students with Visual Impairments who have Physical Disabilities

- The student must be taken to many, varied places and allowed to explore and experience objects and textures in the environment.
- The student will need to visit the same places and explore the same objects repeatedly to develop full concepts.
- Materials of varied textures, shapes, sounds, smells and tastes must be brought to the student because the student cannot seek them out to build meaningful relationships and concepts about the environment.

Section VII
Appendices

File Review Form

Identifying Information

Student Name: _____

Date of Birth: _____ Grade: _____

Address: _____ Telephone Number: _____

Parents or Guardians: _____

Medical Reports

Medical Diagnosis (including information about physical disabilities, neurological disorders and allergies):

_____

_____

_____

_____

Visual Impairment: _____

Physician's Name: _____

Date of Report: _____

Diagnosis: _____

Degree of Visual Impairment: _____

Age of Onset: _____

Functional Vision Assessment

Results: _____

_____

_____

Programming Recommendations: _____

_____

_____

Educational Report

Formal Test Results: _____

Teacher Progress Reports (report cards): _____

Academic Level of Student: _____

Vocational Level of Student: _____

Social Skills: _____

Work Skills: _____

Individualized Program Plan (IPP)

Areas of Strength: _____

_____

_____

_____

_____

Areas of Need: _____

_____

_____

_____

_____

Ongoing Goals: _____

_____

_____

_____

_____

Education Strategies: _____

_____

_____

_____

_____

Resource Materials: _____

_____

_____

_____

_____

Service Delivery Team

Parents: _____

Teacher: _____

Teacher Assistant/Paraprofessional: _____

Education Consultant for Students
with Visual Impairments: _____

Itinerant Teacher/Strategist: _____

Others: _____

_____

Equipment:

- ☐ cane
- ☐ CCTV
- ☐ brailler
- ☐ computer
- ☐ braille printer
- ☐ specialized software
- ☐ slanted desktop
- ☐ desk light
- ☐ magnification devices
- ☐ kits
- ☐ other_____

Interview with Parents

General Information
To help create a complete picture of your child, could you provide recent medical reports as well as the following information.

General health and medical concerns: _____

_____

_____

Information regarding your child's visual impairment (including date of most recent eye examination):

_____

_____

_____

The names of professionals and agencies providing service to your child:

_____

_____

Educational and Social Needs
Tell me about your child's visual impairment and what you think it might mean in my classroom.

_____

_____

_____

How independent is your child (at home, at school, in the community)? Are there any particular difficulties I need to be aware of? How much assistance do you feel your child needs?

_____

_____

_____

What reports and other information about your child do you feel are important for me to have? For example; visual acuity, assessment of visual field, functional vision, recommendations.

_____

_____

_____

There will likely be questions from other students about your child's visual impairment. Have you any suggestions about what might be said and how it should be presented in class?

_____

_____

_____

Are there any other people working with your child that I should know about?

_____

_____

What educational and social goals do you have for your child? _____

_____

_____

Are there any other questions you would like to ask me? For example; what are my classroom expectations, assignments, materials, activities, assessments of progress, projects, portfolios or tests?

_____

_____

_____

What specialized equipment does your child use at home and at school (Braille 'n Speak, braille printer, CCTV)?

_____

_____

Summary of Information from First Meeting with Parents

Student's Name:	Date:
Parents' Names:	Telephone Number: Business Number:

Important People (family, friends, others on educational team):

Description of Vision Loss:

Student's Interests, Hobbies, Strengths:

Questions and Concerns:

Initial Short-term Goals:

Long-term Goals:

Other Information/Suggestions:

Information from an Education Consultant or Itinerant Teacher/Strategist for Students with Visual Impairments

To help provide appropriate programming, please provide the following information:

Degree and Nature of Visual Impairment

An explanation of the student's visual impairment: _____

_____

_____

An explanation of the student's use of residual vision in the classroom: _____

_____

_____

_____

Educational and Social Needs

What equipment should be used? How is it obtained by the school? _____

_____

_____

_____

What adaptations to materials should be made? _____

_____

_____

What are some strategies for instruction particular to the student? For example; verbal instructions.

_____

_____

_____

_____

_____

What are the strategies the student has used in moving throughout the school environment?

_____

_____

_____

What resource materials are available to support programming? Where can this material be obtained?

_____

_____

_____

What resource personnel provide support to the staff and the student? For example; education consultants for students with visual impairments, itinerant teacher/strategist, braillist, teacher assistant.

_____

_____

_____

What are some strategies for including the student in group activities?

_____

_____

_____

What are some strategies for helping all students interact comfortably in informal and formal situations?

_____

_____

_____

Questions to Ask the Student

In order to help you feel comfortable and experience success in the class, please answer the following questions.

Visual Impairment
Do you use any specialized equipment?

_____

_____

What is your understanding of visual impairment in general, and your own visual impairment in particular?

_____

_____

Educational and Social Needs
What type of assistance have you had in the past? For example; education consultant, itinerant teacher/strategist, a buddy, a note-taker, a teacher assistant?

_____

_____

Where would you like to sit in the class?

_____

Which subject areas do you like and which do you dislike?

LIKE: _____

DISLIKE: _____

What are your leisure interests and activities?

_____

_____

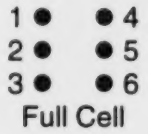
_____

Are you aware of the kinds of activities available during lunch and recess, such as, clubs, sports, games? Do you know how to get involved in these activities?

How will you let me know when you need help?

Are there any questions you would like to ask or anything you think I should know to help you learn more effectively?

Braille Alphabet and Numbers[1]

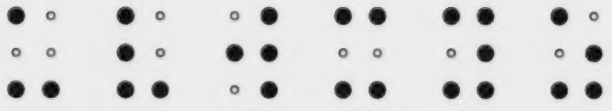


Full Cell

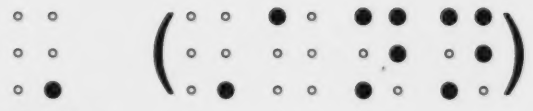
A B C D E F G H I J

1 2 3 4 5 6 7 8 9 0

K L M N O P Q R S T



U V W X Y Z

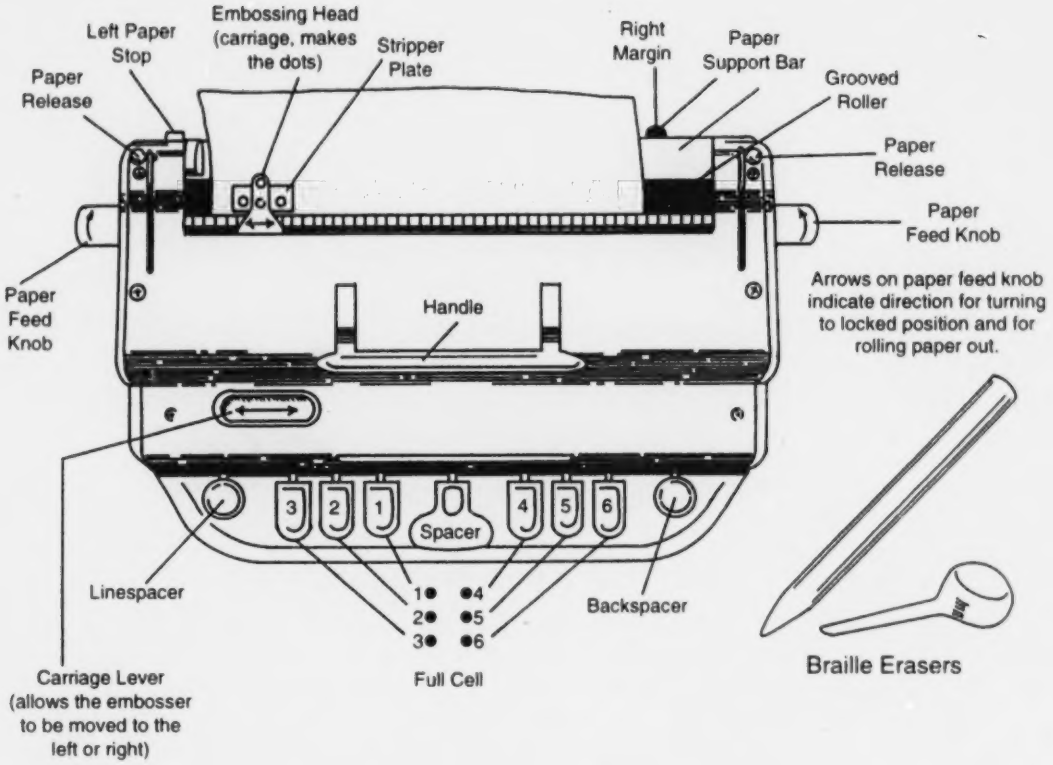


Capital Sign A n n

Number Sign # 1

[1] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 1125), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Braille and the Perkins Braillewriter[2]



[2] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 1126), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Grade 1 and Grade 2 Braille[3]

Grade 1:

Grade 2:

In Grade 2 braille <u>can</u> is simply brailled "c" as a whole word sign for <u>can</u>.

Grade 1:

Grade 2:

<u>p</u> is brailled
<u>er</u> sign is brailled
<u>h</u> is brailled
} This combined stands for the word "perhaps"

Grade 1 Braille — also known as alphabet braille.
Grade 2 Braille — also known as contracted braille

[3] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 1159), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Nemeth Braille Code

1 • • 4
2 • • 5
3 • • 6
Full Cell

Signs of Operation:

Plus:

Multiply:

Minus:

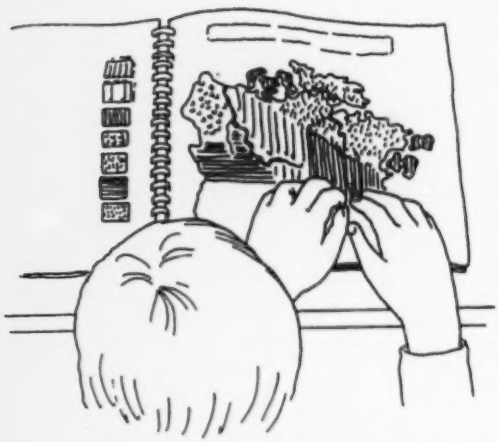
Divide:

Equal:

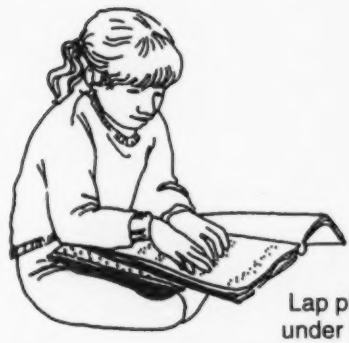
Example:

1 + 3 = 4

Braille Reading Positions[4]



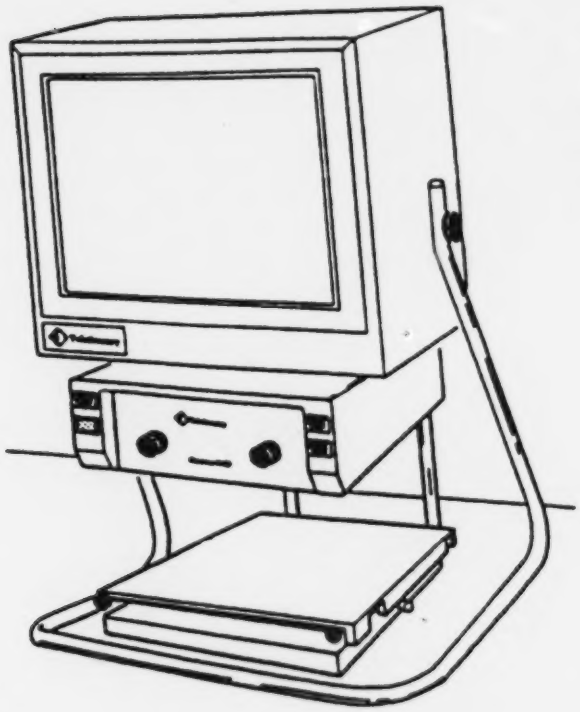
Book on table surface. Student is reading braille labels on a thermoformed book.



Lap pillow under book

[4] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 1160), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Closed Circuit TV System[5]



Purpose: To magnify print and other images onto a 20" colour television screen. The polarity control switch allows the user to display dark letters on a light background or light letters on a dark background.

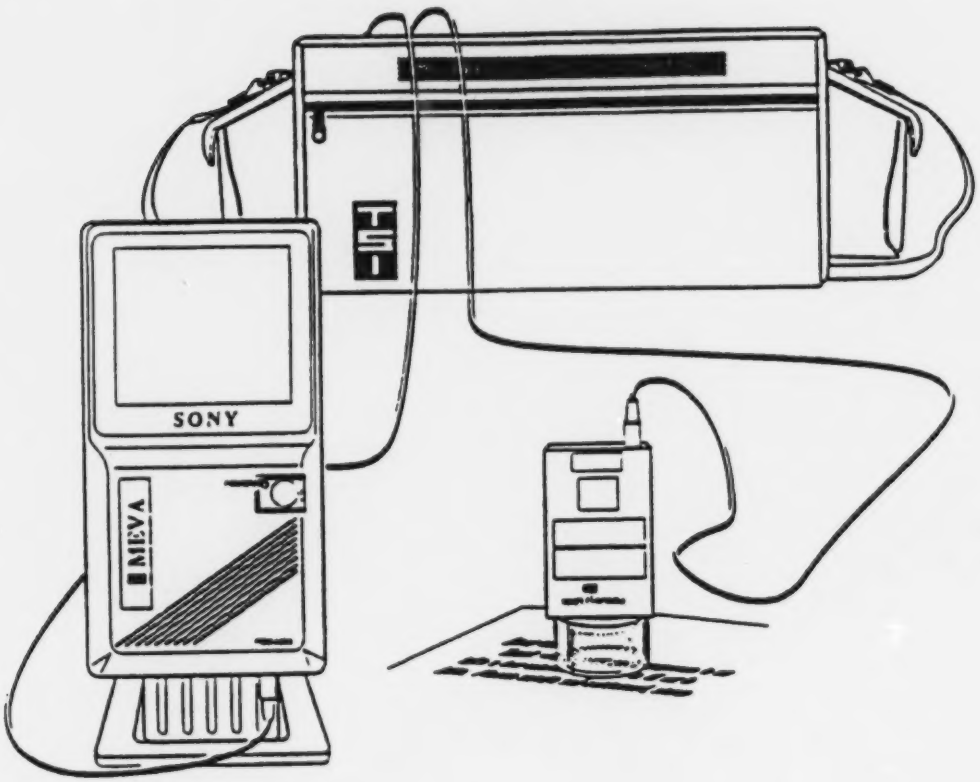
Standard Circulation: 20" monitor with stand, master camera, dust cover, instruction manual, video cable and power cable.

Optional Accessories: None.

---

[5] Wording taken from *Materials Resource Centre for the Visually Impaired equipment catalogue*, Alberta Education, 1995, Edmonton, AB: Materials Resource Centre for the Visually Impaired. Reprinted with permission. Diagram courtesy of Telesensory Systems Ltd., Mountain View, CA. Reprinted with permission.

MEVA (Miniature Electronic Visual Aid)[6]



Purpose:	This is a portable unit which magnifies print and other images.
Standard Circulation:	Instruction manual, battery, AC adapter, softpack carrying case, monitor, charger, camera, four lenses. One unit has the four lenses built in.
Optional Accessories:	None.

[6] Wording taken from *Materials Resource Centre for the Visually Impaired equipment catalogue*, Alberta Education, 1995, Edmonton, AB: Materials Resource Centre for the Visually Impaired. Reprinted with permission. Diagram courtesy of Telesensory Systems Ltd., Mountain View, CA. Reprinted with permission.

Orientation and Mobility[7]

Overview of O & M Pre-school Concept Development Skills

Size, shape and function of objects in the world			
(size)	• big/little • narrow/wide	• long/short • thin/thick	• tall/short
(shape)	• square, circle, triangle, etc.		
(function)	• by daily use (for example, comb for grooming)		

Texture and contour concepts of objects			
(texture)	• rough/smooth • slippery	• hard/soft • bumpy	• sharp/dull • jagged
(contour)	• flat • crooked	• incline/decline • curved	• straight

Time, distance, amount and weight concepts		
(time)	• now/later • day/night • minute, second, hour	• morning, afternoon, evening • today, tomorrow, yesterday
(distance)	• closer/farther • to the driveway • one city block	• across the room, down the hall • across the yard, street • millimetres, centimetres, metres
(amount)	• all/none • more	• empty/full • half/whole
(weight)	• heavy/light	

[7] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (pp. 828–829), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

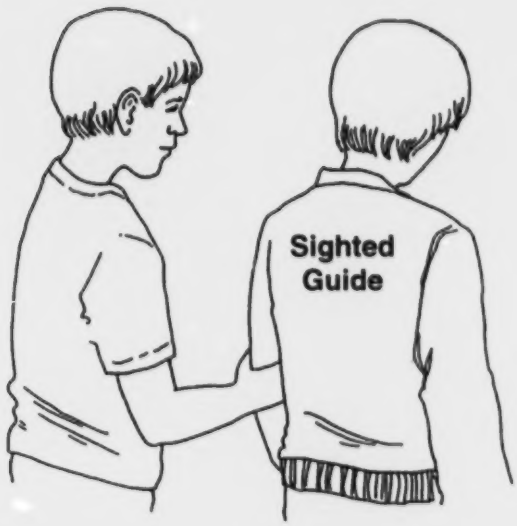
Identification and movement of complex body parts and body planes			
(parts)	• tongue	• chin	• jaw
	• neck	• chest	• shoulder
	• forearm	• wrist	• fingers
	• thumbs	• waist	• thigh
	• hips	• ankle	• heel
(planes)	• top of head	• bottom of foot	• sides of body
	• front of body	• back of body	
(movement)	• bends body backwards, forward, sideways		
	• rises up on toes	• moves forward/backward	

Position of self in relation to objects and to people and objects		
• on/off	• in between	• in front of/behind
• over/under	• next to	• higher/lower
• on top of	• to the side of	• on the bottom of
• high/low	• facing toward	• left/right

Specific environmental concepts (indoors and outdoors)	
(indoor concepts)	• walls, ceilings, floors
	• carpet, linoleum, rugs, curtains
(outdoor concepts)	• sidewalks, streets, driveways, etc.
	• corners, curbs
	• railings, bridges, ramps
	• stairs, escalators, elevators
	• asphalt, dirt, grass, etc.
(means of transport)	• cars, buses, air planes, boats
	• riding toys, bikes, sleds, skis, roller blades

Sighted Guide Techniques[8]

A. For Older Child



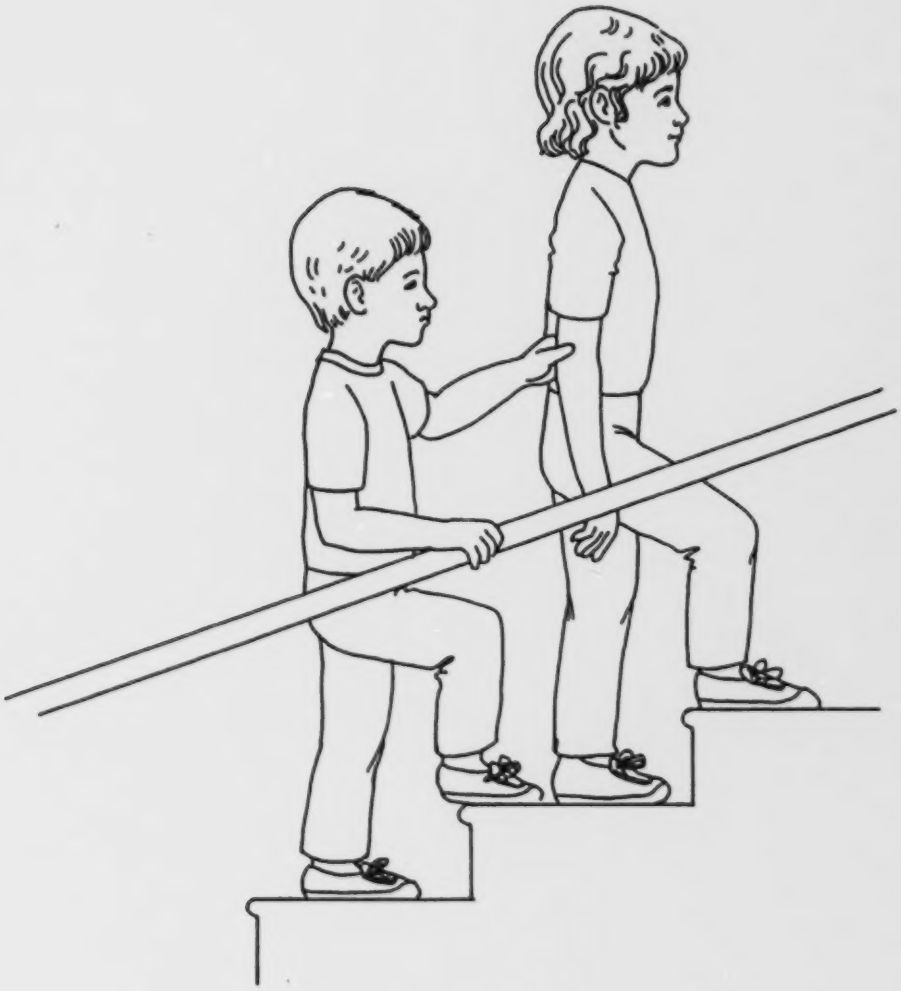
The child who is blind should lightly grasp the guide just above the elbow as this position gives the best movement clues. The thumb is on the outside as in holding a glass. The child's arm needs to be held at a right angle.

B. For Younger Child

In the sighted guide technique, the child may hold onto the guide's wrist and follow the guide's body movement. The child is guided, not pushed or pulled when walking along.

[8] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 810), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Sighted Guide on Stairs[9]



The guide stands toward the middle of the stairs and the child who is blind will be one step behind aligned with the guide's right shoulder and holding onto railing on his right side. The opposite would apply if the railing is on the left side.

[9] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 811), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Indoor Trailing Techniques[10]

A. Trailing

B. Trailing combined with cross-body or upper cross-arm techniques

[10] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 804), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Protective Techniques[11]

Upper Hand & Forearm (cross-body technique)

A.

This technique is used for protection to the upper body. The arm is at shoulder level with the elbow bent. The elbow protects one shoulder while the fingers protect the other.

Lower Hand & Forearm (lower cross-body or dropped hand)

B.

Here the cross-body or upper hand and forearm technique is combined with the lower cross body or dropped hand technique for further protection.

Adapted "Bumper Cars, High"

C.

One hand on top of the other with palms facing away from child, held straight in front of body at shoulder level.

Adapted "Bumper Cars, Low"

D.

One hand on top of the other with palms facing away from child, held straight in front of body at waist level.

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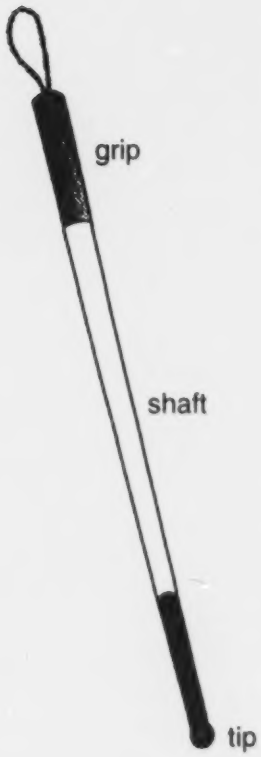
[11] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 796), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Using the Long White Cane[12]

A. Parts



B. Techniques

Constant Contact

Cane tip is kept in contact with the floor as she walks. Thus, with the next step it would be slid to her left side.

[12] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 819), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Safely Locating a Dropped Object[13]

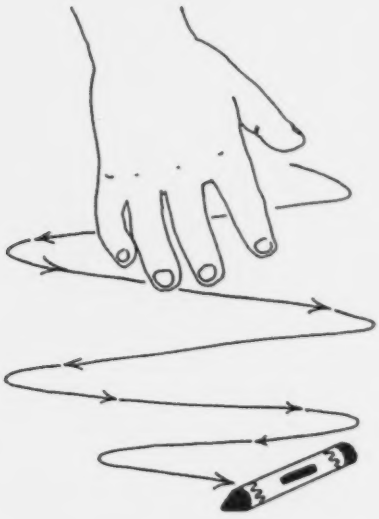
Never bend over when picking up a dropped object. Here the child's head will bump the edge of the desk as she bends over.

This is the correct manner for picking up an object. The girl's hand will provide protection as she squats straight downward to reach for the object.

[13] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 797), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

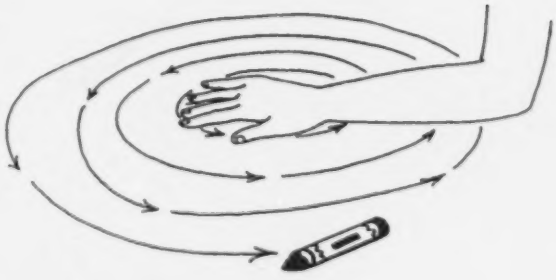
Search Techniques for Dropped Objects[14]

For Younger Child



This technique employs the use of a fanlike (side-to-side) pattern of motion.

For Older Child



Hand and elbow flat against the surface, especially if large area, such as floor. Use the whole hand, starting at the center, make a series of increasingly larger circles.

[14] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 798), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

* Observation Checklist[15]

Behaviour	Yes	No
Rubs eyes excessively.	❑	❑
Shuts or covers one eye, tilts head or thrusts head forward.	❑	❑
Has difficulty with work that requires close use of the eyes (such as putting puzzle parts together or matching identical shapes).	❑	❑
Blinks more than usual or is irritable when doing close work.	❑	❑
Holds objects close to eyes.	❑	❑
Is unable to see distant things clearly.	❑	❑
Squints eyelids together or frowns.	❑	❑
Appearance		
Has crossed eyes.	❑	❑
Eyelids are red-rimmed, crusty or swollen.	❑	❑
Eyes are inflamed or watery.	❑	❑
Has recurring styes (small inflamed swellings on the rim of the eyelid).	❑	❑
Complaints		
Eyes itch, burn or feel scratchy.	❑	❑
Cannot see well.	❑	❑
Has dizziness, headaches or nausea following close eye work.	❑	❑
Has blurred or double vision.	❑	❑

* Adapted from "Signs of Possible Eye Trouble in Children." Available from the National Society for the Prevention of Blindness, 79 Madison Avenue, New York, NY, 10016.

[15] From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired: VIISA Project* (p. 164), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Steps to Take[16]

If a student demonstrates any of the behaviours listed on the observation checklist, there is reason to suspect that the student may have a vision problem. The following steps should be taken.

1. Check the student's file for any reports on the results of vision screening tests or ophthalmological and optometric assessments.

2. Alert the principal and the special education coordinator in the school of your concern about the student's vision.

3. Contact the parents to determine if the student has had a previous vision assessment.

4. If the parents have no information, request their permission for the community health nurse to carry out vision screening. If the community health nurse confirms that the student is having trouble seeing, advise the parents to contact either an optometrist or their family doctor to request a referral to an ophthalmologist for further assessment. This procedure may be followed even if the community health nurse does not identify any problem, but you still have concerns about the student's vision.

[16] From Edmonton Public Schools. Reprinted with permission.

Teaching Peer Names and Voices to a Student with a Visual Impairment[17]

A Classroom Approach: Some Ideas to Try Out

Always say your name when approaching the student. For example; "Hi, _____, it's _____. Model this approach continually for younger students in the classroom. Even if the student with a visual impairment knows your voice, continue to do this. Younger students will need lots of practice using this approach and will need teacher prompting so it becomes automatic and used throughout the school day and year.

GAMES

Guess My Name

Make a few tapes of students' voices, starting with about five. Each student records the same thing. For example; "My favourite food is . . ." The students guess who the name is. (Keep a list of the sequence of voices recorded.)

Variation

All students put their heads and hands on their desks and close their eyes. The teacher touches someone's shoulder. The student touched says, "Guess my name." The other students put up their hands (not looking) to guess. If a student correctly guesses the name, that student can choose the next person to touch.

Practice Round — Voice/Name Identification

Have all students put their heads on their desks and close their eyes. Tell them, "We are listening to our voices." Start by telling them a food you like. Then say, "I'm going to ask each of you a food you like." For example; "Joey, what food do you like?" Always say the student's name first. This gives them practice in pairing names with voices.

VARIATION: Ask what their favourite toy, animal, movie, etc. is.

Reminder to Students

With the students' heads down and eyes closed, say, "What food do you like?" (using no name). Do you know who I asked? No, because I didn't say their name. Remind them to say their names to the student with a visual impairment. Encourage the student with a visual impairment to also address peers by their names.

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[17] Adapted from Regional Education, Assessment and Consultation (R.E.A.C.H.), 1995, Calgary, AB. Reprinted with permission.

Materials Resource Centre for the Visually Impaired (MRC)

12360 – 142 St. N.W., Edmonton, AB T5L 4X9
Telephone: (403) 427–4681 Fax: (403) 427–6683
E-Mail: MaterialsResourceCentre@edc.gov.ab.ca

The MRC Internet Home Page is accessible at http:\\ednet.edc.gov.ab.ca.mrc. It includes sections on: About the MRC, Product Information, What's New at the MRC, and MRC Partners. It also includes the *MRC Equipment Catalogue, Catalogue of Consumable Items, New Resources* and the *MRC Newsletter.*

Publications

***Titles Catalogue*:**
- a listing of all special format materials, kits and professional items arranged in alphabetical order by title
- published annually in January with a July supplement
- stored in a titles catalogue binder which is provided by the MRC
- the catalogue is cumulative. When the January catalogue is received, discard the previous catalogue and supplement.

Subjects Catalogue:
- a listing of all special format materials, kits and professional items arranged in alphabetical order by subject heading
- published annually in January with a July supplement
- stored in a subjects catalogue binder which is provided by the MRC
- the catalogue is cumulative. When the January catalogue is received, discard the previous catalogue and supplement.

For procedures on how to use the catalogues, refer to the instruction sheets sent with the catalogues and/or call the MRC.

MRC Equipment Catalogue:
- a listing of equipment available for loan.

***New Resources*:**
- contains special format materials and professional resource items added to the MRC collection since the production of the previous list
- published nine times throughout the school year
- upon receiving the *Titles Catalogue* or *Titles Supplement Catalogue* or the annual *Kits Subject Catalogue*, discard all previous *New Resources*.

Newsletter:
- profiles information about changes in MRC staff
- contains procedural information on the MRC which can be incorporated into the school's *MRC Procedures Manual*
- lists information about upcoming workshops or conferences
- published nine times throughout the school year.

MRC New Releases Tape:

- an audiotape accompanied by a print listing of newly acquired items which fall into the categories of best sellers, mass market paperbacks or popular novels.
- produced as resources permit
- distributed through schools to junior and senior high school students so that they can make their own reading selections.

MRC Kits Subject Catalogue:

- an alphabetical listing by subject heading of concept development kits, games, mathematical/scientific models, etc., available for loan
- published annually and distributed at the beginning of the school year.

Bibliography of MRC Bibliographies:

- a listing of bibliographies written by MRC staff provides an alternate access to the MRC special format collections.

Catalogue of Consumable Items:

- items in the catalogue have been identified as being of assistance to students who are visually impaired but are not provided as part of the MRC service
- a listing of consumable items that either cannot be reused or are considered to be small low-vision aids
- ordering information is provided.

Borrowing Materials from the MRC

The MRC loans:

- braille, audiotape and large print curriculum, and leisure reading material
- kits, including sensory, concept and skills development materials; tactile games and maps
- professional resources for educators of the visually impaired.

Specific items can be chosen from MRC publications which are sent to teachers and consultants who work with students with visual impairments.

- *Tiles Catalogue* and *Subjects Catalogue*
- *New Resources*
- *Kits Subject Catalogue*
- *Bibliographies*
- *Catalogue of Consumable Items.*

How to Order Materials

The MRC provides order forms.

- Schools can fax, courier or mail their orders.
- Limit your request to one format per order form.
- If you are ordering a title that is not listed in the *MRC Catalogue* in the format the student requires, complete a Resource Order Form and send it to the MRC with the print copies as specified on the form. The MRC has a recognized priority for accepting titles for production.

Due Dates

- Not using it? Return it! Returning unused materials promptly ensures that another student will have a chance to use it.
- Curriculum materials are loaned for the entire school year.
- All kits and other resources, such as leisure reading and professional resource books have a one-month loan period. These titles are subject to recall when a waiting list develops.
- The MRC begins to process requests for holiday stories six weeks before the holiday. Initially, orders are limited to two holiday stories per student.

Returning Materials

- MRC policy is to pay the cost of sending all items requested to schools. Schools are required to return items to the MRC at their own expense.
- Braille and audiocassettes can be sent free of charge with the designation of "Literature for the Blind." Costs will be incurred to return large print, kits and equipment. It is the experience of MRC staff that shipping rates from all areas of Alberta are similar.

Returning Kits

- Return the box! Every kit sent to you is packaged in its own box, some of them specifically designed to hold the contents of the kit.
- Check the contents! Every kit has a list of contents. This is to ensure that you check and return all parts of the kit. A kit such as "Bright Sights" has well over 100 individual pieces! The returned kit is checked at the MRC and missing items recorded. A kit does not circulate if parts are missing and may be out of commission for several months while awaiting replacement parts.

- Send it back to the MRC. Please wrap the box to prevent wear and tear, and loss of contents should the kit box open during transit. Whereas small, durable kits can be sent via Canada Post, larger more fragile kits should be sent prepaid through a courier service; e.g., Loomis, Purolator, etc.

Renewals

You may renew the loan of specific items. To do this, complete the Renewal Request Form for titles which you will be storing in your school over the summer months for use in September. Do not use the MRC Resource Order Form for renewals.

Borrowing Equipment from the MRC

- To borrow equipment, students must be registered with the MRC. Students are registered by education consultants or itinerant teacher/strategists for students with visual impairments.
- The MRC Equipment Order Form should be used to request equipment for student use. An order form is included at the back of the *Equipment Catalogue*. It is to be saved as your master and photocopied as required.
- A Loan or Renewal Agreement will be sent to the principal of the school, or to a person authorized by the school jurisdiction to sign agreements. An authorized signature denotes acceptance of financial responsibility for MRC equipment while on loan to the school and in transit back to the MRC. One procedural option is for the school or jurisdiction to add the estimated replacement cost (as provided by the MRC) to insurance coverage.
- Instruction manuals should be read carefully before the equipment is operated. When applicable, battery charging is discussed in the manual. Equipment should be kept in a safe area while in the school. The dust covers provided with many pieces of equipment should be used when the equipment is not in use.
- Specialized equipment is fragile, technically exacting and expensive. Equipment loaned by the MRC is carefully packed, frequently in specially designed moulded packing boxes. MRC packing boxes are to be stored in the schools. These boxes and the original packing are to be used to return requirement to the MRC.
- It is the responsibility of the school or school jurisdiction to return equipment, securely packaged, at its own expense. Equipment should be returned by private courier or registered mail.
- The return of a faulty piece of equipment should be accompanied by a description of the problem in order to facilitate repair.
- Replacement equipment will be provided on request, whenever possible, while malfunctioning equipment is being repaired.
- Equipment is loaned on a first come, first served basis. If the MRC is unable to fill a request immediately because it is out-of-stock, the student will be placed on a waiting list until the equipment becomes available. Equipment should be returned if it is no longer being used, or if the student changes or leaves school, so that it can be reassigned.
- The normal loan period for most pieces of equipment is one school year. Renewal arrangements can be made, if necessary.
- The MRC is responsible for repairs to MRC equipment only.
- The MRC can provide ordering information for equipment listed in the catalogue.

Information for the Substitute Teacher[18]

Date: _____

TO MY SUBSTITUTE:
Please be aware that _____ is in my _____ class. _____ is a student with a visual impairment who reads:

- ❑ in braille
- ❑ in large print
- ❑ with audiotapes
- ❑ using magnification devices.

Please remember:

1. Anything you write on the board will need to be verbalized.

2. During fire drills, you will need to take care to make sure this student is safe. I have made the following special arrangements to ensure his or her safety:

_____

_____

_____

3. Other:

_____

_____

_____

Should you have any questions or concerns, speak to _____ here at the school, or contact the education consultant or itinerant teacher/strategist for students with visual impairments, _____ at _____ (telephone number).

Sincerely,

_____

[18] Adapted from Calgary Board of Education, 1995, Calgary, AB. Reprinted with verbal permission.

Section VIII
Glossary[19]

Please note that definitions of common eye conditions are found on page VI.3.

Acuity: The sharpness of vision; usually refers to central vision.

Adventitious: Accidental or acquired; not hereditary.

Age-appropriate: Consistent with the concept of normalization. This refers to the use of materials and activities with individuals who have developmental delays which reflect their chronological age rather than their developmental age.

Aligning: Lining up the right or left side of the body against an object or surface to assist in establishing a line of travel.

Amblyopia: Low or reduced visual acuity without an apparent disease of the eye.

Aniridia: Complete or partial absence of the iris, usually hereditary.

Anophthalmos: Absence of the eye caused by a developmental defect.

Aphakia: Absence of the lens of the eye.

Auditory Sense: Related to or experienced through the process of hearing.

Binocular Vision: The ability to use the two eyes simultaneously to focus on the same object and to fuse the two images into a single image. This gives a correct interpretation of the object's solidity and position in space.

Blind Mannerisms: Repetitive, stereotypical movements and mannerisms, such as eye-poking and rocking which are characteristic of many blind individuals.

Blindness: Legal blindness ranges from a visual acuity of 6/60 (20/200) in the better eye after correction to having no usable vision, or a field of vision reduced to an angle of 20 degrees.

Body Awareness: A conscious appreciation of the relationship of all body segments to each other and to objects. A mental picture of the physical parts of a person and their relationships to each other.

Body Image: Picture of one's own physical body and its capacity for movement and function.

Buphthalmos (Hydrophthalmos): Enlargement of the eyeball (usually due to glaucoma).

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[19] Adapted from *Perkins activity and resource guide: a handbook for teachers and parents of students with visual and multiple disabilities* (pp.11–2 to 11–18), by Charlotte Cushman, et al., 1992, Watertown, MA: Perkins School for the Blind. Reprinted with permission.

Clearing: The process of checking to see if an area is free of objects. This can be done by sweeping a cane on the floor or ground, or by sweeping a hand on a surface, such as the seat of a chair.

Clue: Any sound, odour, temperature, tactile or visual stimulus that affects the senses and can readily be used in determining one's position in space or to help establish a line of direction.

Coloboma: Congenital cleft due to failure of the eye to complete growth in the part affected, such as a gap in the formation of the iris.

Colour Blindness (Colour Deficiency): Diminished ability of the visual system to perceive differences in colour, especially in red and green.

Compensatory Skills: Techniques, habits or activities that must be developed to overcome severe visual impairment. Includes daily living skills, social skills or emotional skills.

Concrete Objects: Actual physical objects which can be experienced tactually and visually as known things.

Cones: Light-receiving retinal nerve cells concentrated primarily in the central retina of the eye, concerned with colour discrimination and detail vision in high levels of illumination.

Congenital: Existing before birth or at birth; dating from birth.

Contrast: The relative difference between lightness and darkness of things observed.

Depth Perception: The ability to perceive the relative distance of objects and their spatial relationship to each other.

Developmentally Delayed: Functioning at a developmental level below one's chronological age.

Diabetic Retinopathy: Diabetes causes hemorrhaging of blood vessels in the retina, causing decreased visual acuity and fluctuating vision; progressive, gradual loss of vision; secondary conditions of glaucoma; retinal detachments; cataracts and eye palsies.

Diopter: A unit of measurement of the refractive power of a lens or an optical system.

Diplopia: The seeing of one object as two; double vision.

Direction Taking: Using an object or sound to assist in travelling a straight line.

Directionality: The ability to physically move your body when given various positional terms: right, left, forward, backward.

Distance Vision: Refers to the visual acuity level attained at six metres (20 feet).

Down's Syndrome: A congenital condition due to a genetic abnormality (extra #21 chromosome). Ocularly, individuals with Down's syndrome may demonstrate an obvious squint and nystagmus. Many are highly myopic (near-sighted) and almost half of this population have congenital cataracts.

Drop Off: Any sharp decline in the environment such as a down curb or stairs.

Eccentric Viewing: Tilting of the head to gain the best image.

Enucleation: Complete surgical removal of the eyeball.

Esotropia: An involuntary turning inward of one eye (convergent strabismus or crossed eye).

Exotrophia: Abnormal turning outward from the nose of one or both eyes (divergent strabismus).

Eye Dominance: Tendency of one eye to assume the major function of seeing, being assisted by the less dominant eye.

Familiarization: The process of learning the placement, arrangement and relationship of objects within an area.

Field of Vision: The area or extent of physical space visible to an eye held in a fixed position.

Fixation: The process, condition or act of directing the eye toward the object of regard, causing, in a normal eye, the image of the object to be centered on the fovea.

Focus: The point where light rays converge after passing through a lens.

Fovea: Small depression in the retina at the back of the eye; the part of the macula adapted for most acute vision.

Fusion: The power of coordinating the images received by the two eyes into a single mental image.

Gait: The style or rate of walking.

Glare: A quality of relatively bright light which causes discomfort in the eye or which interferes with visibility and visual performance.

Guideline: Also called "shoreline." A line in the environment where two surfaces meet (sidewalk and grass).

Hemianopsia: Blindness of one-half of the visual field of one or both eyes.

Homebase: A familiar location and starting point to learn the relationships of other objects in a given area (the front door of a classroom).

Hypertropia: Strabismus characterized by the upward turn of one eye.

Hypotropia: Strabismus characterized by the downward turn of the eye.

Illumination: Providing physical light to an area.

Intraocular: Within or inside the eye.

Iris: Coloured circular membrane suspended behind the cornea and in front of the lens of the eye.

Iritis: Inflammation of the iris.

Keratoconus: Cone-shaped deformity of the cornea.

Kinesthetic Sense: Ability of the brain to perceive the location or relationship of parts of the body as they are moving, without checking their location with any other sense.

Landmark: Any sensory information, such as a familiar object, sound, odour, temperature or tactile clue, useful to an individual to assist him or her during independent travel.

Large Print or Type: Print that is larger than type commonly found in magazines, newspapers and books.

Laterality: The internal process whereby the individual has complete motor awareness of both sides of the body.

Lens: The part of the eye located immediately behind the pupil; its function is to focus light rays on the retina.

Light Perception (L.P.): The ability to distinguish light from dark.

Long White Cane: A cane which is designed for travel purposes for an individual who is blind/visually impaired. Its purpose is to detect obstacles and surface changes in the travel environment of its user.

Low Vision (Partial Sight): Reduced central acuity or visual field loss which, even with the best optical correction provided by regular lenses, still results in visual impairment from a performance standpoint.

Low Vision Aids: Optical or non-optical devices useful to persons with low vision.

Low Vision Assessment: Comprehensive assessment of a visually impaired person's visual impairment, visual potentials and capabilities.

Macrophthalmos: Abnormally large eyeball, resulting chiefly from infantile glaucoma.

Macula: The small area of the central retina that is the area with greatest visual acuity.

Magnifiers (Hand, Stand, Illuminated): Convex lenses that can increase the size of a retinal image or can bring the image into clearer focus.

Metronome: An instrument designed to mark exact time by a regularly repeated tick.

Microphthalmos: Abnormally small eyeball present at birth.

Mobility: The ability to move from one location to another in a safe and efficient manner. Term used to denote the ability to navigate from one's present fixed position to one's desired position in another part of the environment (see Orientation).

Mobility Device: Equipment used in the same manner as a long white cane. Its function is to act as a device and detection tool of obstacles and ground surface changes to the person using it.

Monocular: Pertaining to or affecting one eye. Pertaining to any optical instrument which is used with only one eye.

Multihandicapped:
Term used to classify individuals with two or more disabilities present.

Muscle Balance: Ability of the eye muscles of each eye to pull together to allow binocular vision to occur in all directions.

Near Vision: The ability to distinctly perceive objects at normal reading distance, about 36–40 cm (14–16 inches) from the eyes.

Nemeth Code: a mathematical and scientific notation code in braille.

Null Point: The point at which nystagmoid movements slow or stop. The individual will often tilt one's head to create this state.

Object Perception: The ability to use sound and the absence of sound to locate and avoid objects in a travel pathway.

Occipital Lobe: About 80 per cent of messages from the eye go to the occipital lobe in the back of the brain where most of the seeing takes place and images are formed. The other 20 per cent of messages go to the part that controls the eye muscles for eye movement, etc.

Occluder: A patch placed over the eye to obscure or block vision.

O.D. (Oculus Dexter): The right eye.

Olfactory Sense: Relating to or experienced through the sense of smell.

Ophthalmologist: A physician, an MD, who specializes in diagnosis and treatment of defects and diseases of the eye, performing surgery when necessary or prescribing other types of treatment, including glasses.

Optic Atrophy: Degeneration of the optic nerve which carries messages from the retina to the brain.

Optic Nerve: The rods and cones are light receptors sending information to the brain via millions of tiny nerve fibres that come together in the back of the eye to form one big bundle called the optic nerve.

Optician: A professional that grinds and fits lenses prescribed by an ophthalmologist or optometrist.

Optometrist: A doctor of optometry, an O.D. is a health care professional who specializes in the examination, diagnosis and treatment of conditions or impairments of the visual system.

Orientation: The ability to use sensory information to know one's location in the environment and to know one's relationship to objects in the environment. Process by which a person who is blind or visually impaired uses the remaining senses to establish his or her position and relationship to all other significant objects in the environment (see Mobility).

O.S. (Oculus Sinister): The left eye.

O.U. (Oculus Uterque): Both eyes.

Partial Sight: For educational purposes, a partially seeing student is one who has visual acuity of 6/21 (20/70) or less in the better eye after correction and who can use vision as the chief channel of learning.

Peripheral Vision: Ability to perceive presence, motion or colour of an object outside of the direct line of vision.

Photophobia: Abnormal sensitivity to and discomfort from light.

Point of Reference: A determined fixed point within an environment which is used to create a relation or connection with other points in the same environment.

Pre-cane Skills: Concept development and travel skills usually taught prior to cane techniques.

Protective Technique: The use of specific hand and forearm positions as a means of self-protection as one navigates forward into space. These techniques are employed to detect objects that are located at face or body level.

Ptosis: Drooping of the upper eyelid below its normal position.

Pupil: The round hole in the centre of the iris; its purpose is to regulate the amount of light entering the eye.

Reading Stand: Device that supports regular or large print books.

Residual Vision: Any usable, remaining vision.

Retina: The thin membrane which covers the entire inside surface of the eye.

Rods: Light-receiving retinal nerve cells concentrated in the peripheral retina; sensitive to movement and light in low levels of illumination.

Saccadic Movement: A quick, abrupt movement of the eye, as obtained in changing fixation from one point to another.

Scotoma: A blind or partially blind area in the visual field.

Search Pattern: A method of recovering a dropped object.

Sensory Training: Learning to use the senses (hearing, touch, smell and sight) to one's maximum potential.

Shorelining: Following a guideline in the environment, usually by using a cane (see Guideline).

Sighted Guide: The use of a sighted person as a travel partner; the individual who is visually impaired actively makes contact with the sighted guide by holding his or her upper arm and moves in tandem with the guide.

Slate and Stylus: Portable braille writing tools used for note-taking.

Snellen Chart: Used for testing central visual acuity. It consists of lines of letters, numbers or symbols in graded sizes. Each size is labelled with the distance at which it can be read with the normal eye. Most often used for testing vision at six metres (20 feet).

Sound Differentiation: The ability to distinguish between different and useful sounds.

Sound Localization: The ability to determine the exact bearing, line or direction of the source of a sound.

Spatial Relationship: The ability of an observer to perceive the position of two or more objects in relation to self and others.

Squaring Off: Lining up the back of the body against an object or surface to assist in establishing a line of travel.

Stereopsis: Visual perception of depth or three-dimensional space.

Stereoscopic Vision: Ability to perceive relative position of objects in space without such cues as shadow, size and overlapping.

Tactile: Pertaining to the sense of touch.

Total Blindness: Complete inability to see.

Trailing: The act of using the hand to follow a surface for any or all of the following reasons: to determine one's position in space, to locate a specific object or place, to obtain a parallel line of travel.

Tunnel Vision: Contraction of the visual field to such an extent that only a small area of central visual acuity remains, giving the affected individual the impression of looking through a tunnel.

Typoscope: A black card in which a window has been cut, which is the length and width of two or three lines of print. When placed on the page, it helps the student focus.

Visual Acuity: Acuteness or clearness of vision which is dependent on the sharpness of the retinal focus, the sensitivity of the optic nerve and the interpretive faculty of the brain.

Visual Attention: Sustained looking at visual objects or pictures.

Visual Awareness: Knowledge that something visible is present in the visual field.

Visual Cortex: The area of the brain where visual information is received and interpreted for seeing.

Visual Cues: Any type of visual information which may be used by an individual to orient self in space, move from one place to another, perform any task or function, or locate a desired place or object.

Visual Efficiency: The degree to which specific visual tasks can be performed with ease, comfort and minimum time — contingent upon personal and environmental variables.

Visual Exploration: Careful inspection of visible things or the surrounding environment.

Visual Field: The area of physical space visible when the body, head and eyes are in stationary position.

Visual Functioning: A person's use of vision to perform tasks which require visual orientation. Visual functioning seems to be related to previous experiences, needs and expectations of self or others, and general motivation.

Visual Impairment: Any optically or medically diagnosable condition in the eye(s) or visual system that affects the development and normal use of vision. Impairments may be of a minor nature, may be correctable, or may be severe and uncorrectable.

Visual Motor: The control and manipulation of body movements in relation to what is observed.

Visual Perception: The learned ability to construct a visual image, to be able to distinguish characteristics and to give meaning to what one sees.

Visual Stimulation: Presentation of visual objects and materials in a consistent and orderly sequence so as to permit and foster visual perceptual development.

Section IX
Teaching Resources

This listing is not to be construed as an explicit or implicit departmental approval for use of the resources listed. These titles are provided as a service only, to assist school authorities to identify resources that contain potentially useful ideas. The responsibility to evaluate these resources prior to selection rests with the user, in accordance with any existing local policy.

Awareness series (1995). Edmonton, AB: Alberta Education (available from the LRDC).

This series of brochures helps teachers handle extraordinary learning and medical conditions. They include: allergies, asthma, autism, cerebral palsy, deafness and hearing loss, diabetes, Down's syndrome, emotional disturbance, epilepsy, fetal alcohol syndrome, learning disabilities, muscular dystrophy, spina bifida, Tourette syndrome and visual impairments.

Base ten blocks. Exclusive Educational Products (available from the LRDC).

These mathematics manipulatives include 10 centimetre cubes, 80 flats of 100 units, 400 rods of 10 units and centimetre cubes of 1000 units.

Chisanbop (Korean finger math). Materials available from Foothills Academy Society, Calgary, AB.

Neurological impress method of teaching mathematics skills using fingers. Appropriate for students experiencing difficulty learning basic mathematics facts.

Concept development for visually handicapped children: a resource guide for teachers and other professionals working in educational settings (1982, ©1973) by William T. Lydon & Loretta M. McGraw. New York, NY: American Foundation for the Blind (available on loan from the MRC).

A program for integrating such concepts as body imagery, gross motor movement, posture and tactile discrimination into the curriculum from ECS on. Discusses the differences in the ways blind and sighted students learn about their bodies and environments. Presents a clear description of each concept along with exercise for its implementation.

Cranmer abacus. Louisville, KY: American Printing House for the Blind.

To assist students with visual impairments to learn mathematics by way of concrete examples. The frame of the abacus measures 6¾ inches by 3¼ inches. A larger version is available for use by young students and those who lack fine motor skills.

Creative play activities for children with disabilities: a resource book for teachers and parents (1989) by Lisa Rappaport Morris & Linda Schultz. Champaign, IL: Human Kinetics Books.

This book has been designed to promote the development of young children with disabilities through play and games, providing ideas and resources for use in the classroom and home.

Cube-a-Link Cubes (available from the LRDC).

These mathematics manipulatives include one box of 500 cubes, 50 each of 10 colours.

An Evaluation of technical equipment used by students with visual impairments (1993) by Dianne McConnell. Edmonton, AB: University of Alberta.

An assessment tool that can be used to evaluate a piece of technical equipment for a specific student with a visual impairment, as well as assist professionals in the evaluation of newly developed technology.

Films on blindness, July 1992: an annotated listing of films and videos on blindness and visual impairment (1992). Louisville, KY: American Printing House for the Blind (available on loan from the MRC).

Compiled for the Association for Education and Rehabilitation of the Blind and Visually Impaired July 1992 conference. Information about each film includes title, source, length, year of production and a description of the content. Addresses for sources are in the appendix.

Foundations of education for the blind and visually handicapped children and youth: theory and practice (1986) by Geraldine T. Scholl. New York, NY: American Foundation for the Blind (available on loan from the MRC).

This book is divided into three sections. Part I provides an overview of basic information about students with visual impairments, for teachers. Part II discusses the components that are basic to any educational program for students with visual impairments. Part III presents special concerns related to the school curriculum.

Get ready, get set, go: a guide for parents of visually impaired children (1980) by Jeannette Schuch. East Lansing, MI: International Institute for Visually Impaired (available on loan from the MRC).

The author is an ECS teacher in a school for children who are blind. Her purpose is to impress upon parents and caregivers that a child's early experiences have a direct influence on how competent the child will become.

Getting in touch with play: creating play environments for children with visual impairments (1991) by Kim Blakely, Mary Ann Lang, Roger Hart. Long Island City, NY: The Lighthouse Inc. (available on loan from the MRC).

The purpose of this manual is to offer design ideas that support more creative and satisfying play experiences for students who are blind or visually impaired as well as for those with full vision. The book demonstrates how outdoor play environments can be designed to provide stimulating activities through manipulation of play elements, the organization of play spaces and input from adults.

A Guide to independence for the visually impaired and their families (1994) by Vivian Younger & Jill Sardegna. New York, NY: Demos (available on loan from the MRC).

This is a comprehensive, hands-on book for the newly visually impaired and their families. The book teaches basic tasks of daily living, how to address new and puzzling feelings and fears, how to respond to embarrassing situations, how to appropriately assess behaviour and stages of growth, and how to find additional help and information regarding sight loss. Lists of services and organizations are for the United States only.

Helping the visually impaired child with developmental problems (1988) by Sally M. Rogow. New York, NY: Teachers College Press (available on loan from the MRC).

This book is about students with visual impairments who have developmental delays or other additional handicaps. It was written to identify, and through the use of case histories, portray the consequences of combined visual, physical and neurological handicaps; to outline research in the field and to explore approaches to effective intervention and curricula, with an emphasis on community integration. The premise of the book is that integration with people and the environment is essential to effective learning and personal growth.

A Life worth living: a book about parenting infants and pre-schoolers with visual impairment and multidisability (1992) by Judy M. Robinet. Windsor, ON: Robinet Publications (available on loan from the MRC).

Over 75 families relate strategies devised to encourage their children's participation with their families at home and in their communities. The personal reflections explore their feelings of loss and grief, crossing the hurdle of denial and empowering readers to support their children.

Listen and think AR (auditory readiness level) by Eleanor Henry, Dorothy Clavell; editor, Jackie Mallis.

Listen and think B by Eleanor Henry; editor, Jackie Mallis.

Listen and think C, D, E, F, G by Martha Perone, Mary Carter, Sylvia Zucker; editors, Jeanne Burdick, Dorothy Clavell, Jackie Mallis.

Listen and think H, I by Eleanor Henry; editor, Jackie Mallis. New York, NY: McGraw-Hill. Adapted from a 1969 edition of Educational Development Laboratories (available on loan from the MRC).

Listen and Think is a developmental program structured to help the student become an alert listener, a critical thinker and an independent learner. This series consists of 16 cassettes for each level, a teacher's handbook, suggestions for use, braille/large print answer sheets, progress charts, crayons and pins.

Low vision: a resource guide with adaptations for students with visual impairments (2nd edition) (1994) by Nancy Levack. Austin, TX: Texas School for the Blind and Visually Impaired (available on loan from the MRC).

This document provides guidelines for assessing students' visual functioning, planning and implementing programming to enhance students' visual functioning, and serves as a reference guide for information related to low vision.

Math-mate. Cokato, MN: Distributed by Howbrite Solutions Inc.

The math-mate is a self contained manipulative which combines the number line with the abacus. Math-mates are made with laminated number strips recessed into wood. Numerals are printed in black on ivory background. Braille math-mates are also available.

Moving to inclusion: active living through physical education: maximizing opportunities for students with disabilities (1994) by Canadian Association for Health and Physical Education, Recreation and Dance (CAHPER) (available on loan from the MRC).

Includes comprehensive resources on visual impairment, multiple disabilities, cerebral palsy, intellectual disability, physical awkwardness, deaf and hard of hearing.

Proceedings of the Eighth International Conference on Blind and Visually Impaired Children (1993) by Linda B. Stainton & Eugene C. Lechelt. Edmonton, AB: Canadian National Institute for the Blind (available on loan from the MRC).

Proceedings from this conference represent a collection of the thoughts of some of the leading players in the fields of rehabilitation, education, medicine and other professions as they relate to students with visual impairments.

Rap with the facts. Akron, OH: Twin Sister Productions.

Mathematics facts to rap rhythm on tape.

Social skills activities for special children (1993) by Darlene Mannix. West Nyack, NY: Center for Applied Research in Education (available on loan from the MRC).

Over 100 lessons and blackline masters to help students become aware of acceptable social behaviour and develop proficiency in acquiring basic social skills. The lessons are organized in three sections: accepting rules and authority at school, relating to peers, and developing positive social skills.

Software resource guide for selecting software for children with special needs (1992) by Pamela Ross. Evanston, IL: National Lekotek Center (available on loan from the MRC).

This guide includes more than 280 carefully selected software programs that have been used successfully with students with special needs ranging in age from two to 16. Categories include subject, content, age level, exceptionality, hardware, peripherals, description, price, rating, type, teacher options, record keeping, graphics, animation and sound. Separate listings of software companies, peripherals and adaptive equipment resources are included.

Teacher alert system: a guide for teacher managed assessment of students who are "at risk" of school failure (1991) (available from the LRDC, Alberta Education, Edmonton, AB).

This guide is designed for the classroom teacher and school personnel who are concerned about the needs of those students who deviate in some way from the "average student." The *Teacher Alert System* can assist in the identification, assessment and intervention process for students with special needs that make them at risk for learning problems. The *Teacher Alert System* is one way to approach each difficulty and begin to structure each solution.

Teacher intervention practices: TIPS A companion document to the teacher alert system (1992) (available from the LRDC, Alberta Education, Edmonton, AB).

This companion book is for classroom teachers and other school personnel concerned about individual students who may be at risk for learning problems. TIPS addresses issues related to home and school environment, health, learning and temperament. TIPS has a sources of support section that lists the types of personnel who have expertise in the particular area of concern, or the appropriate agencies that can render assistance.

Teaching children with visual impairments (1992) by Anthony B. Best. Philadelphia, PA: Open University Press (available on loan from the MRC).

A practical guide to helping students overcome the effects of visual impairment. Discusses the range and definitions of visual impairment, its population and history, the provision of educational services, the teaching and learning environment, the curriculum, and the development of tactile and listening skills, residual vision, movement and mobility.

Technological resources for students with deaf-blindness and severe disabilities (1992) by Nancy Sall & Harvey H. Mar. New York, NY: Center for Adaptive Technology (available on loan from the MRC).

Includes a detailed review of 20 computer software programs with vignettes describing how each program was adapted for a particular student, listings of adaptive devices, references, hardware and software companies, and an annotated bibliography of 40 articles and papers on special education technology.

Technology for tots: using computers with preschool children with visual impairments (1992) by Barbara Kushner Sosna et al. New York, NY: The Lighthouse Inc. (available on loan from the MRC).

This book is a guide for those who want to teach preschool children with visual impairments how to use computers. The book describes integrating computers into classrooms and homes, answering questions teachers and parents may have about selecting appropriate hardware and software, and sharing information on how to fund and develop computer projects.

Travel tales: a mobility storybook (1988) by Julia Halpern-Gold, Robin Weinstock-Adler, Shelly Faust-Jones. Bethel, PA: Mostly Mobility (available on loan from the MRC).

A storybook about Elliot, a young child with a visual impairment. The book is designed to be read aloud to students with visual impairments from preschool through Grade 3. All chapters are written with a view of the world that makes sense to a child with a visual impairment.

Vision video: integrating the visually impaired student in the 90's (1993). Toronto, ON: Metropolitan Toronto School Board (available from ACCESS and available on loan from the MRC).

This video provides inservice training for classroom teachers and administrators who have students with visual impairments integrated into their school settings. The video demonstrates:

- specific teaching methods and adaptations necessary for successful integration of students who use braille and those with limited visual impairments

- current technology which can assist students with visual impairments and their teachers
- partnerships between itinerant vision teachers, regular classroom teachers, parents and students.

Workjobs — for parents: activity-centered learning in the home (1975). Manlo Park, CA: Addison-Wesley Co. (available on loan from the MRC).

Describes manipulative activities designed to help students develop language and number skills, hand-eye coordination, observing, seeing relationships and making judgements.

Pre-Braille and Braille Teaching Materials for Beginning Braille Readers

A handbook of braille contractions (1990) by Harry Schuchman. Tarzana, CA: American Action Fund for Blind Children and Adults (available on loan from the MRC).

This twin vision booklet is designed to meet the needs of teachers and students of braille. Pages of contractions are arranged alphabetically and numerically, and punctuation is included.

Just enough to know better (1988) by Curran. Boston, MA: National Braille Press (available on loan from the MRC).

This manual is designed to help parents learn the basics of the braille literacy code and numbers.

The Mangold developmental program of tactile perception and braille letter recognition (1977). Castro Valley, CA: Exceptional Teaching Aids (kit available on loan from the MRC).

The Mangold program can be used after the readiness level of *Patterns*, but along with the *Patterns Preprimer*. This program should be used as a supplement to a basal reading series and/or as a remediation program for the braille reader who already knows the braille code but is not a proficient reader.

Patterns pre-braille program (1987). Louisville, KY: American Printing House for the Blind (kit available on loan from the MRC).

A learning readiness program designed for use with children before they begin the readiness level of a basic braille reading program. It provides a teacher's manual which provides guidance on teaching basic book concepts, tactual tracking experiences to provide for concept development and touch-and-tell lessons. This program should be instituted by a trained consultant for students with visual impairments or a teacher assistant who has been trained to teach this program.

Patterns: the primary braille reading program (1981, 1982, 1983). Louisville, KY: American Printing House for the Blind (kit available on loan from the MRC).

This is a complete program designed specifically for young braille readers, readiness through the third reader level. It offers complete kits for six levels: readiness through third reader level, Library Series for five levels and Preprimer through third reader level. This program is taught by a consultant for students with visual impairments or a teacher assistant with guidance from the consultant.

Read again (1990). Louisville, KY: American Printing House for the Blind (kit available on loan from the MRC).

A braille program for teenagers and adults who have been print readers and now need to use braille as their reading medium.

Tactual discrimination worksheets. Louisville, KY: American Printing House for the Blind.

A four-part set of consumable worksheets for braille reading readiness which teaches discrimination and tracking (shapes and angles to braille characters), spaces, long and short lines, same and different.

Touch and tell (1974). Louisville, KY: American Printing House for the Blind (available on loan from the MRC).

A set of three braille reading readiness books designed to stimulate thinking and discussion with young children. They teach discrimination, tracking and basic concepts.

Understanding braille and braille literacy. New York, NY: American Foundation for the Blind.

Two informative pamphlets with information on braille.

Kits

Bright sights: learning to see (1984). Louisville, KY: American Printing House for the Blind (available on loan from the MRC).

This program consists of a set of materials that is divided into two levels: sensory and perceptual. The sensory level is a set of fluorescent materials designed to stimulate a student's initial visual interest and to help him or her develop visual identification skills. The perceptual level contains blocks, peg boards, templates and other materials to help the student develop visual perception and discrimination.

Focus in mathematics (multihandicapped program): fundamental operations and concepts underlying schema (1986) by Frank L. Franks, et al. Louisville, KY: American Printing House for the Blind (available on loan from the MRC).

An activity based program which emphasizes the fundamental operations, properties and structures of mathematics. All concepts are introduced through the manipulation of objects. Operations and concepts include: sorting, matching, counting, addition, subtraction, fractions, graphs, time and money.

Lightbox materials (1984, 1986). Louisville, KY: American Printing House for the Blind (available on loan from the MRC).

The lightbox is a translucent, white plexiglass work surface, lit from below, which provides an even, high-contrast background for opaque materials and a source of illumination for coloured, transparent items. Three different kits can be purchased to go with the lightbox. Level I comes with a variety of materials and a manual of activities designed to teach basic visual skills such as eye-hand coordination, simple matching, colour and form discrimination

and tracking. Level II is designed to teach matching and identification, part-whole relationships, sequencing, pattern duplication, spatial relations and visual memory. Level III was created to help students with visual impairments with skills such as prewriting and handwriting, matching and sorting, recognition and identification (of pictures, numbers and letters) and higher-level spatial relations, visual memory, sequencing, visual closure and part-whole relationships.

Sensory stimulation kit: visual kit (1978). Louisville, KY: American Printing House for the Blind (available on loan from the MRC).

This kit contains a variety of visual stimuli (toys, colourful materials, coloured caps for flashlights and penlights) and cards describing activities for these objects.

Sewell raised line drawing kit (1970s). New York, NY: American Foundation for the Blind (available on loan from the MRC).

Basic kit consists of a drawing board, a pencil stylus and mylar paper. Complete kit consists of a compass, a braille protractor, a braille ruler, a pencil stylus, mylar paper and a drawing board.

Wikki Stix. Phoenix, AZ: Distributed by Wikki Stix Co. (available on loan from the MRC).

Reusable coloured strips made from a special wax compound that never dries out or spoils. It is water proof and non-toxic and is used to outline pictures, letters, numbers or shapes. This kit includes a book entitled *Hands-On Learning with Wikki Stix*.

Section X
Publishers' Addresses

Addison Wesley Publishers Ltd.
26 Prince Andrew Place
P.O. Box 580
Don Mills, ON M3C 2T8
Telephone: (416) 447–5101
1–800–387–8028
Fax: (416) 443–0948
1–800–465–0536
Orders: (416) 447–1779

American Action Fund for Blind Children and Adults
18440 Oxnard St.
Tarzana, CA 91356
USA
Telephone: (818) 343–2022

American Foundation for the Blind (AFB)
Product Center
100 Enterprise Place
P.O. Box 7044
Dover, DE 19903–7044
USA
Telephone: (302) 677–0200

American Printing House for the Blind (APH)
P.O. Box 6085
Louisville, KY 40206–0085
USA
Telephone: (502) 895–2405
Fax: (502) 895–1509

Canadian National Institute for the Blind (CNIB)
12010 Jasper Ave.
Edmonton, AB T5K 0P3
Telephone: (403) 488–4871 (in Edmonton)
1–800–365–2642
(outside Edmonton)
Fax: (403) 482–0017

CAPHER
1600 James Naismith Dr.
Gloucester, ON K1B 5N4
Telephone: (613) 748–5639
Fax: (613) 748–5737

The Center for Adaptive Technology
15 W. 65th St.
New York, NY 10023
USA
Telephone: (212) 873–1409
Fax: (212) 875–0733

The Center for Applied Research in Education
Subs. of Prentice Hall, Inc.
P.O. Box 430
West Nyack, NY 10994
USA
Telephone: (201) 767–5937

Demos Publications Inc.
Suite 201, 386 Park Ave. S.
New York, NY 10016
USA
Telephone: (212) 683–0072

Exceptional Teaching Aids
20102 Woodbine Ave.
Castro Valley, CA 94546
USA
Telephone: (510) 582–4859
Fax: (510) 582–5911

Exclusive Educational Products
243 Saunders Road
Barrie, ON L4M 6E7
Telephone: (705) 725–1166
Fax: (705) 725–1167

Foothills Academy Society
745 – 37 St. N.W.
Calgary, AB T2N 4T1
Telephone: (403) 270–9400

Foothills Educational Materials
#250, 200 Rivercrest Dr. S.E.
Calgary, AB T2C 2X5
Telephone: (403) 236–1655
Fax: (403) 279–7303

Howbrite Solutions Inc.
2500 Montgomery Ave. S.W.
Kokato, MN 55321
USA

Human Kinetics
Distributed in Canada by
E. A. Milley Enterprises Inc.
Mulberry Lane, R. R. # 1
Locust Hill, ON L0H 1J0
Telephone: 1–800–399–6858
Fax: (905) 427–9096

International Institute for the Visually Impaired
1975 Rutgers
East Lansing, MI 48823
USA

International Tele-Film Enterprises Ltd.
301 – 5090 Explorer Dr.
Mississauga, ON L4W 4T9
Telephone: 1–800–561–4300
Fax: (905) 629–1211
E-Mail: itf0001@ibm.net

Learning Resources Distributing Centre (LRDC)
Alberta Education
12360 – 142 St. N.W.
Edmonton, AB T5L 4X9
Telephone: (403) 427–5775
Fax: (403) 422–9750

The Lighthouse Inc.
Low Vision Products
36-02 Northern Blvd.
Long Island City, NY 11101
USA
Telephone: (718) 937–6959
Fax: (718) 786–0437

Magic Lantern Communications Ltd.
775 Pacific Road, Unit 38
Oakville, ON L6L 6M4
Telephone: 1–800–263–1717
Fax: (905) 827–1154

Marlin Motion Pictures Ltd.
211 Watline Ave.
Mississauga, ON L47 1P3
Telephone: (905) 890–1500
Fax: (905) 890–6550

McGraw-Hill Ryerson Ltd.
300 Water St.
Whitby, ON L1N 9B6
Order Desk: 1–800–565–5758
Fax: 1–800–463–5885

Montgomery County Public School
850 Hungerford Dr.
Rockville, MD 20850
USA
Telephone: (301) 279–3000

Mostly Mobility
R. D. 1, Box 1448A
Bethel, PA 19507
USA
Telephone: (717) 933–5681

National Braille Press
88 St. Stephen St.
Boston, MA 02115
USA
Telephone: (617) 266–6160
Fax: (617) 437–0456

National Federation of the Blind
1800 Johnson St.
Baltimore, MD 21230
USA
Telephone: (410) 659–9314

National Lekotek Center
2100 Ridge Ave.
Evanston, IL 60201–2796
USA
Telephone: 1–800–366–PLAY
(708) 328–0001 (Voice)
Fax: (708) 328–5514

Open University Press
Taylor & Francis, Inc.
1900 Frost Road, Suite 101
Bristol, PA 19007
USA
Telephone: 1–800–821–8312
(215) 785–5800

Pennsylvania College of Optometry Bookstore
1200 West Godfrey Ave.
Philadelphia, PA 19141
USA
Telephone: (215) 276–6200

Perkins School for the Blind
175 North Beacon St.
Watertown, MA 02172–2790
USA
Telephone: (617) 924–3490
Fax: (617) 926–2027

Robinet Publication
P.O. Box 1512
Windsor, ON N9A 6R5
Telephone: (519) 978–3358

Teachers College Press
Teachers College
Columbia University
1234 Amsterdam Ave.
New York, NY 10027
USA
Orders to:
P.O. Box 20
Williston, VT 05495–0020
USA
Telephone: 1–800–488–2665

Texas School for the Blind and Visually Impaired
1100 W. 45 St.
Austin, TX 78756–3494
USA
Telephone: 1–800–872–5273

Twin Sisters Product Inc.
1340 Home Ave., Suite D
Akron, OH 44310–2570
USA
Telephone: (216) 633–8900
1–800–248–8946

University of Alberta Press
Athabasca Hall, Room 141
Edmonton, AB T6G 2E8
Telephone: (403) 492–3662
Fax: (403) 492–0719

Wikki Stix Co.
2432 W. Peoria Ave., Suite 1188
Phoenix, AZ 85029
USA
Telephone: 1–800–869–4554
1–800–TOWIKKI

Publishers' Addresses: Specialized Materials and Equipment, Technology

A B SEE
6749 Lasalle St.
Vancouver, BC V5S 3X4
Telephone: (604) 432–1711
Fax: (604) 432–1721

Equipment: Large Print DOS

Aroga Marketing Group Inc.
1405 Bewicke Ave.
North Vancouver, BC V7M 3C7
Telephone: (604) 986–7999
Fax: (604) 986–7070

Equipment: PowerBraille, Duxbury, JAWS, Outspoken, ScreenPower, IBM Zoom Text, Mac inLarge, Braille 'n Speak, Braille Mate, Braille Lite

Blazie Engineering
105 E. Jarrettsville Road, Unit D
Forest Hill, MD 21050
USA
Telephone: (410) 893–9333
Fax: (410) 836–5040

Equipment: IBM Screen Reader, JAWS, Outspoken, Braille 'n Speak, Braille Lite, Duxbury, Type 'n Speak

Canadian National Institute for the Blind (CNIB)
Edmonton:
12012 Jasper Ave. N.W.
Edmonton, AB T5K 0P3
Telephone: (403) 488–4871
Fax: (403) 482–0017

Equipment: Reading Edge, Sharp 620/640, Panasonic and Texas Instrument calculators

Calgary:
15 Colonel Baker Place N.E.
Calgary, AB T2E 4Z3
Telephone: (403) 266–8831
Fax: (403) 265–5029

Lethbridge:
1119 – 3 Ave. S.
Lethbridge, AB T1J 0J5
Telephone: (403) 327–1044
Fax: (403) 380–2672

Medicine Hat:
533 – 1 St. S.E.
Medicine Hat, AB T1A 0A9
Telephone: (403) 527–2211
Fax: (403) 526–3548

Carousel
497A Garbally Road
P.O. Box 43009
Victoria North
Victoria, BC V8X 3G2
Telephone: (604) 388–1146

Equipment: IBM Screen Reader

Duxbury
435 King St.
P.O. Box 1504
Littleton, MA 01460
USA

Equipment: Duxbury

EYES — Entering Your Ear Systems
657 Goulding St.
Winnipeg, MB R3G 2S3
Telephone: (204) 775–1789
Fax: (204) 783–0055

Equipment: JAWS, Braille 'n Speak, Braille Lite, Duxbury

HMI Computer Group
#104, 20577 Langley By-pass
Langley, BC V3A 5E8
Telephone: (604) 533–5400

Equipment: JAWS

L S & S Group
P.O. Box 673
Northbrook, IL 60065
USA
Telephone: 1–800–468–4789
(708) 498–9777
Fax: (708) 498–1482
E-Mail: LSSGRP@aol.com

Equipment: Intellitalk, JAWS, Outspoken, IBM Screen Reader, IBM Zoom Text, MAGic, VisAbility, Mac inLarge, Braille 'n Speak, Duxbury

Materials Resource Centre for the Visually Impaired (MRC)
Alberta Education
12360 – 142 St. N.W.
Edmonton, AB T5L 4X9
Telephone: (403) 427–4681
Fax: (403) 427–6683
E-Mail:
MaterialsResourceCentre@edc.gov.ab.ca

Equipment available on loan: Braille 'n Speak, Braille Lite, Sharp 620/640 talking calculator, Panasonic talking calculator, Texas Instrument talking calculator, Compu-Lenz, CCTV, cassette recorder, brailler.

Microcomputer Science
5220 Bradco Blvd.
Mississauga, ON L4W 1G7
Telephone: (905) 629–1654

Equipment: DragonDictate

Raised Dot Computing
408 South Baldwin St.
Madison, WI 53703
USA
Telephone: (608) 257–9595
Fax: (608) 257–4143

Equipment: MegaDots

Telesensory Systems
455 N. Bernardo Ave.
P.O. Box 7455
Mountain View, CA 94039–7455
USA
Telephone: (415) 960–0920
1–800–227–8418
Fax: (415) 969–9064

Equipment: PowerBraille

Section XI
Community Resources in Alberta

The following provide services which support students with visual impairments.

ACCESS Network
Media Resource Centre
The Media Resource Centre offers video and print resources of programs related to disabilities.
3720 – 76 Ave.
Edmonton, AB T6B 2N9
Telephone: (403) 440–7729
Telephone: 1–800–352–8293
(outside Edmonton)
Fax: (403) 440–8899

Alberta Education
See Learning Resources Distributing Centre, Materials Resource Centre for the Visually Impaired and Special Education Branch.

Alberta Society for the Visually Impaired (A.S.V.I.)
The A.S.V.I. is a support and advocacy group for children with visual impairments, and their parents. Meetings take place once a month and speakers and outings which support the education of professionals who work with children with visual impairments are arranged.
Calgary:
63 Dover Meadow Close S.E.
Calgary, AB T2B 2E4
Telephone: (403) 273–8499
Edmonton:
Box 72063, Ottewell P.O.
Edmonton, AB T6B 3A7
Telephone: (403) 438–4658

Alberta Sports and Recreation (A.S.R.A.B.)
A.S.R.A.B. is a volunteer organization dedicated to the provision of recreation and sports opportunities for Albertans with visual impairments.
Calgary:
Box 85056, Albert Park Postal Outlet
Calgary, AB T2A 7R7
Telephone: (403) 262–5332
Edmonton:
11759 Groat Road
Edmonton, AB T5M 2K6
Telephone: (403) 453–8567
Fax: (403) 453–8553

Calgary Board of Education Student Services
The Calgary Board of Education employs four full-time teachers who specialize in teaching students with visual impairments. These teachers/strategists are available to schools to provide assessment, inservices and assistance with program planning, adaptive materials and equipment, and instruction for students in specialized skills.
Calgary Board of Education
Student Services
728 – 32 St. N.W.
Calgary, AB T2N 2V9
Telephone: (403) 270–0665
Fax: (403) 283–0217 or (403) 777–8001

Canadian Council of the Blind, Alberta Division
The Canadian Council of the Blind advocates on behalf of adults who are visually impaired. Its work includes group and self-advocacy, addressing topics ranging from accessibility and legislative changes to community and government services to help improve independence. It also provides representation for provincial and national conferences.
Edmonton Club
Box 74006
Edmonton, AB T5K 0R0
Telephone: (403) 462–8879

Canadian National Institute for the Blind (C.N.I.B.)
The Canadian National Institute for the Blind offers services to students with visual impairments in the areas of counselling and referral, early intervention and library services. Contract services are provided by professionals in orientation and mobility, technical aids, functional vision assessments and rehabilitation teaching.
Calgary:
15 Colonel Baker Place N.E.
Calgary, AB T2E 4Z3
Telephone: (403) 266–8831 (in Calgary)
1–800–376–2642 (outside Calgary)
Fax: (403) 265–5029
Edmonton:
12010 Jasper Ave.
Edmonton, AB T5K 0P3
Telephone: (403) 488–4871 (in Edmonton)
1–800–365–2642 (outside Edmonton)
Fax: (403) 482–0017
Lethbridge:
1119 – 3 Ave. S.
Lethbridge, AB T2E 4Z3
Telephone: (403) 327–1044
Fax: (403) 380–2672
Medicine Hat:
533 – 1 St. S.E.
Medicine Hat, AB T1A 0A9
Telephone: (403) 527–2211
Fax: (403) 526–3548

Computer Learning and Information Centre (C.L.I.C.)
Parents or school personnel may borrow and preview software programs to determine their suitability for the student before purchasing them. The C.L.I.C. is open from Tuesday to Thursday from 4 p.m. to 8 p.m. Appointments should be made.
#502, 5920 MacLeod Trail S.
Calgary, AB T2H 0K2
Mailing address:
Box 36084, Lakeview P.O.
Calgary, AB T3E 7C6
Telephone: (403) 259–6594

Consulting Services Outreach Belvedere Office
Belvedere is subsidized by Alberta Education to provide services to schools throughout Alberta. These services relate to students with disabilities from the ages of 2 ½ to 20 years. The consultants include physiotherapists, occupational therapists, communication disorders consultants, audiologists, consultants in hearing disorders, psychologists, consultants in visual impairments and education behaviour specialists.
13359 – 62 St.
Edmonton, AB T5A 0V5
Telephone: (403) 473–5616
Fax: (403) 475–7037

Co-ordinated Assessment Services for the Exceptional (C.A.S.E.)
C.A.S.E. is subsidized by Alberta Education to provide services to schools throughout Alberta. An interdisciplinary approach is used to provide appropriate, comprehensive educational programming support for teachers of students with complex needs. Services include audiology, hearing education, occupational therapy, psychology, speech-language pathology, technical aids and vision education.
9351 – 116 Ave.
Grande Prairie, AB T8V 6L5
Telephone: (403) 539–0333
Fax: (403) 539–7613

Edmonton Public Schools
Edmonton Public Schools employs four consultants with expertise in the education of students with visual impairments.
13359 – 62 St.
Edmonton, AB T5A 0V5
Telephone: (403) 473–5616
Fax: (403) 478–7037

Edmonton Public Schools Distribution Centre
The Distribution Centre stocks braille paper and adhesive braille label.
Supplies Catalogue, p.5
18004 – 116 Ave.
Edmonton, AB
Telephone: (403) 453–8000
Order Desk: (403) 455–0247
Fax: (403) 455–7245

Handicapped Children's Services (H.C.S.)
H.C.S. is a service of Alberta Family and Social Services which assists parents with unusual costs associated with parenting a child who has a disability.
Calgary:
Alberta Family and Social Services
Family Support Program
#306, 301 – 14 St. N.W.
Calgary, AB T2N 2A1
Telephone: (403) 270–5461
Edmonton:
Alberta Family and Social Services
Family Support Program
15th Floor, Standard Life Building
10405 Jasper Ave.
Edmonton, AB T5J 3N4
Telephone: (403) 427–4354
Fax: (403) 427–0256

Learning Resources Distributing Centre (L.R.D.C.) (Alberta Education)
The Learning Resources Distributing Centre is the Alberta Government's agent responsible for the acquisition, distribution and sale of learning resources and related educational materials to Alberta schools.
Customer Service and Sales
12360 – 142 St. N.W.
Edmonton, AB T5L 4X9
Telephone: (403) 427–5775
Fax: (403) 422–9750
Internet address:
http://ednet.edc.gov.ab.ca/lrdc

The Low Vision Clinic
At the Low Vision Clinic, an assessment of the most appropriate magnifying aids for each client with a visual impairment is conducted by an ophthalmologist and a rehabilitation counsellor from the C.N.I.B. If a student wishes to attend the clinic, it is recommended that a referral be requested from the student's ophthalmologist.
University of Alberta
2–135 Clinical Sciences Building
University of Alberta
Edmonton, AB T6G 2G3
Telephone: (403) 492–6419
Foothills Hospital
Ophthalmology Department
1403 – 29 St. N.W.
Calgary, AB T2N 2T9
Telephone: (403) 670–1385

Materials Resource Centre for the Visually Impaired (MRC)
The MRC service mandate states that preschool to Grade 12 students with visual impairments in Alberta can borrow special format materials, kits and equipment from the MRC through teachers or consultants. The MRC provides services to school authorities on behalf of students with visual impairments within the province of Alberta as the first priority. As Alberta Education supports the sharing of resources interprovincially, the MRC loans materials, when they are available, to Department of Education Special Materials Resource Centres in other provinces.
12360 – 142 St. N.W.
Edmonton, AB T5L 4X9
Telephone: (403) 427–4681
Fax: (403) 427–6683
E-Mail:
MaterialsResourceCentre@edc.gov.ab.ca

Regional Education, Assessment and Consultation (R.E.A.C.H.)
R.E.A.C.H. is subsidized through Alberta Education to provide consulting services to schools throughout southern Alberta who have students with disabilities from the ages of 2½ to 20 years. Services include physiotherapists; occupational therapists; audiologists; consultants in hearing disorders, visual impairments, communication disorders and behaviour, and psychologists.
5139 – 14 St.
Calgary, AB T2T 3W5
Telephone: (403) 777–6983
Fax: (403) 777–6997

Special Education Branch (Alberta Education)
Alberta Education provides services related to students who have special needs through the Special Education Branch.
10th Floor East Devonian Building
11160 Jasper Ave.
Edmonton, AB T5K 0L2
Telephone: (403) 422–6326
Fax: (403) 422–2039
See also the Special Education Branch's *Teacher Resources Catalogue,*
E-Mail: Bmorban@edc.gov.ab.ca

Technical Resource Centre
The Technical Resource Centre is a non-profit organization which provides information and services on rehabilitation technology to students with physical disabilities.
#200, 1201 – 5th St. S.W.
Calgary, AB T2R 0Y5
Telephone: (403) 262–9445
Fax: (403) 262–4539

William Watson Lodge
The lodge has been designed so that persons who require a barrier-free facility can spend comfortable overnight stays in a wilderness setting.
Peter Lougheed Provincial Park
Kananaskis Country, AB
Telephone: (403) 591–7227

Section XII
Footnote References

1. *Resources for Family Centered Intervention for Infants, Toddlers, and Preschoolers who are Visually Impaired: VIISA Project* (p. 1125), by Elizabeth Morgan, 1995, Logan, UT: Hope Inc.
2. *Ibid* (p. 1126).
3. *Ibid* (p. 1159).
4. *Ibid* (p. 1160).
5. Wording taken from *Materials Resource Centre for the Visually Impaired Equipment Catalogue* (p. 17) by Alberta Education, 1995, Edmonton, AB: Materials Resource Centre for the Visually Impaired. Diagram courtesy of Telesensory Systems Ltd., Mountain View, CA.
6. *Ibid* (p. 19).
7. *Resources for Family Centered Intervention for Infants, Toddlers, and Preschoolers who are Visually Impaired: VIISA Project* (pp. 828–829), by Elizabeth Morgan, 1995, Logan, UT: Hope Inc.
8. *Ibid* (p. 810).
9. *Ibid* (p. 811).
10. *Ibid* (p. 804).
11. *Ibid* (p. 796).
12. *Ibid* (p. 819).
13. *Ibid* (p. 797).
14. *Ibid* (p. 798).
15. *Ibid* (p. 164).
16. Edmonton Public Schools.
17. Regional Education, Assessment and Consultation (R.E.A.C.H.), 1995, Calgary, AB.
18. Adapted from Calgary Board of Education, 1995, Calgary, AB. Reprinted with verbal permission.
19. Adapted from *Perkins Activity and Resource Guide: A Handbook for Teachers and Parents of Students with Visual and Multiple Disabilities* (pp. 11–2 to 11–18), by Charlotte Cushman, et. al., 1992, Watertown, MA: Perkins School for the Blind.

Section XIII
Bibliography

Alberta Education (n.d.). *Materials Resource Centre for the Visually Impaired Equipment Catalogue.* Edmonton, AB: Alberta Education, Materials Resource Centre for the Visually Impaired.

This catalogue identifies the equipment circulated to students who are visually impaired. Where possible, an illustration is provided.

Beaver, Kathleen A., Mann, William C. (1995). Overview of technology for low vision. *The American Journal of Occupational Therapy*, 49(9), pp. 913–918.

This article provides an overview of technology, resources and services to assist persons with low vision in educational and vocational settings.

Cushman, Charlotte, et al. (1992). *Perkins activity and resource guide: a handbook for teachers and parents of students with visual and multiple disabilities, Volumes 1 & 2.* Waterton, MA: Perkins School for the Blind (available on loan from the MRC).

A resource which outlines techniques and methods for working with students who are blind with additional handicaps. It includes units on teaching students with multiple disabilities, developing the educational program, language and cognition, social and motor development, functional academics, vocational training, daily living skills, independent living skills, sensory integration, developmental music, toys, games, leisure time activities, technology, augmentative communication. Most units include educational guidelines, critical skills chart, activities and materials, developmental screening checklists and resources.

Morgan, Elizabeth (1995). *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired*: Logan, UT: Hope Inc. VIISA Project, SKI*HI Institute (available on loan from the MRC).

The first comprehensive manual for both family and centre-based services describes the preschool-aged child with a visual impairment. It includes a section on annotated resources.

Scholl, Geraldine T. (1986). *Foundations of education for the blind and visually handicapped children and youth.* New York, NY: American Foundation for the Blind (available on loan from the MRC).

This resource provides information regarding educational program needs for students with visual impairments including those who have additional disabilities. The book is designed for students who are preparing to be special education teachers and for practising teachers who wish to update their knowledge.

Torres, Iris & Corn, Ann (1990). *When you have a visually handicapped child in your classroom: suggestions for teachers* (2nd edition). New York, NY: American Foundation for the Blind (available on loan from the MRC).

This pamphlet is an introduction to the unique educational needs of students with visual impairments. It was written primarily for the regular classroom teacher who is responsible for teaching a student with a visual impairment.

Willoughby, Doris M. & Duffy, Sharon L. M. (1989). *Handbook for itinerant and resource teachers of blind and visually impaired students.* Baltimore, MD: National Federation of the Blind (available on loan from the MRC).

This handbook provides practical, comprehensive and creative advice about the education of students with visual impairments.

Alberta
EDUCATION